

MODEL:
WAFER-CV-D25501/N26001

**3.5" SBC with Intel® Atom™ D2550/N2600 Processor,
DDR3, VGA/Dual LVDS, Dual PCIe GbE, USB 2.0,
PCIe Mini, SATA 3Gb/s, Audio and RoHS**

User Manual

Revision

Date	Version	Changes
August 27, 2015	1.04	Updated Section 1.4: Dimensions Updated Section 4.5: Chassis Installation
December 11, 2012	1.03	Added CN6 connector information
23 November, 2012	1.02	Updated the note for the Intel® GMA driver limitation
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26 June, 20	1.00	Initial release

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Manual Conventions

**WARNING**

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.

**CAUTION**

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.

**NOTE**

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

**HOT SURFACE**

This symbol indicates a hot surface that should not be touched without taking care.

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Chapter

1

Introduction

1.1 Introduction

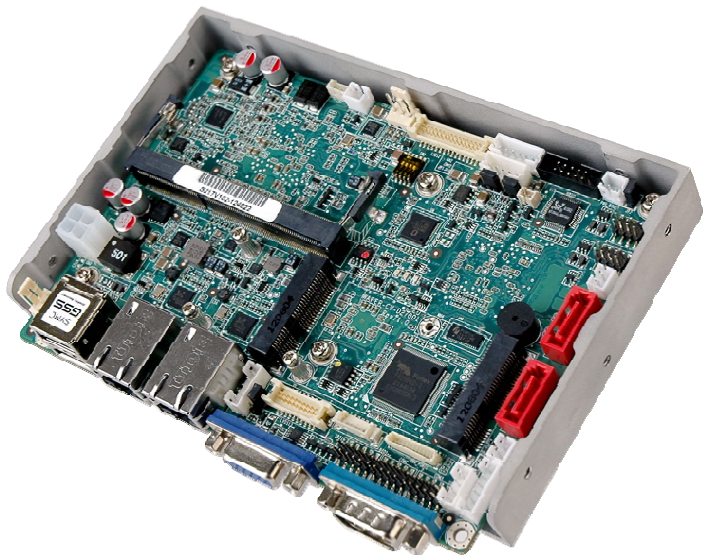


Figure 1-1: WAFER-CV-D25501/N26001

The WAFER-CV-D25501/N26001 3.5" motherboard is an Intel® Atom™ D2550/N2600 processor platform that supports one 1066 MHz or 800 MHz DDR3 SO-DIMM memory. The WAFER-CV-D25501/N26001 supports VGA display output and comes with two LVDS connectors supporting 24-bit or 18-bit LVDS screens. Maximum six USB ports, two SATA 3Gb/s connectors, two PCIe Mini card slots, four COM ports, and one audio connector provide flexible expansion options.

1.2 Model Variations

The model variations of the WAFER-CV-D25501/N26001 are listed below.

Model No.	CPU
WAFER-CV-D25501-R10	Intel® Atom™ D2550 1.86 GHz
WAFER-CV-N26001-R10	Intel® Atom™ N2600 1.6 GHz

Table 1-1: WAFER-CV-D25501/N26001 Model Variations

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1.3 Connectors

The connectors on the WAFER-CV-D25501/N26001 are shown in the figure below.

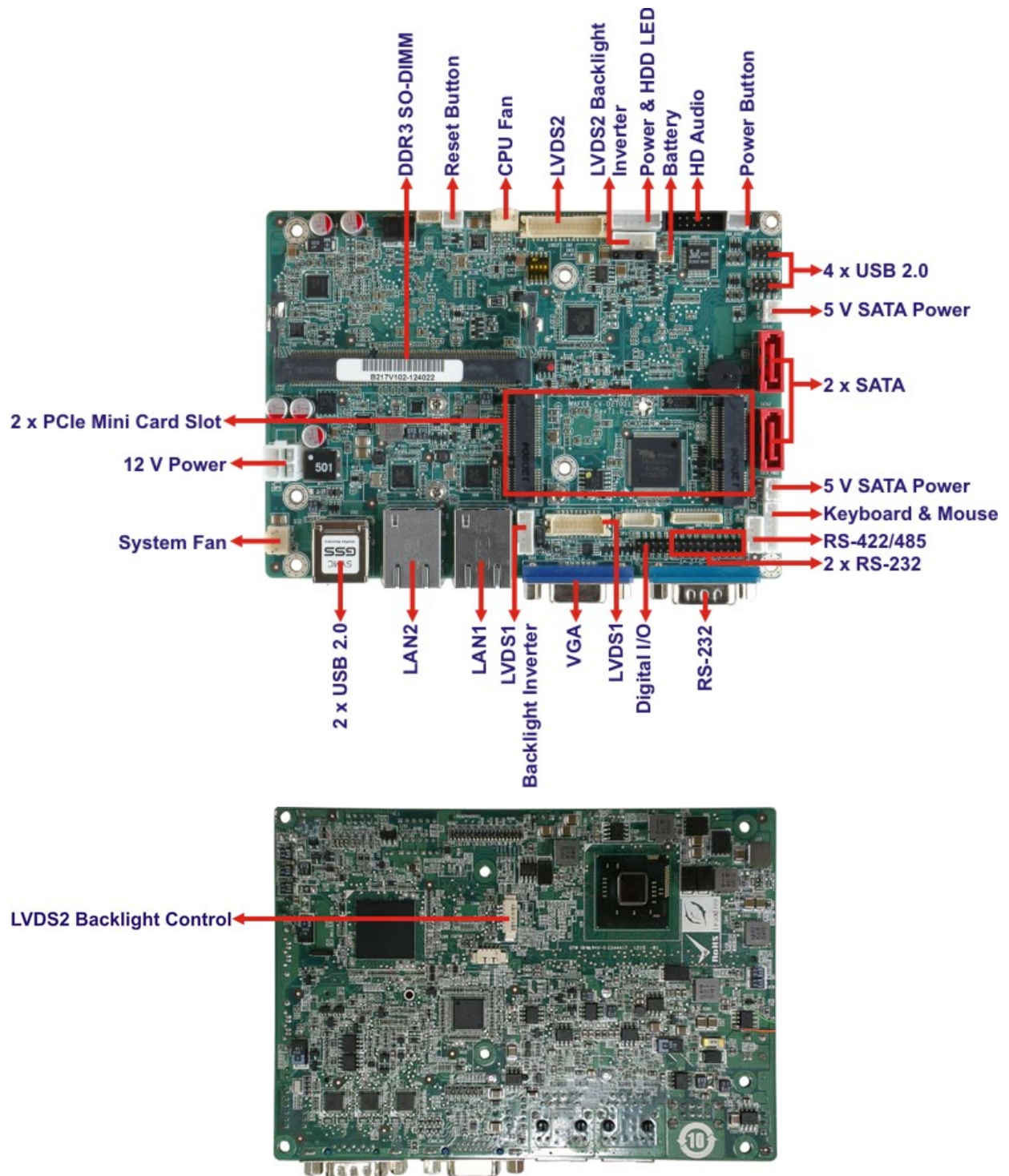


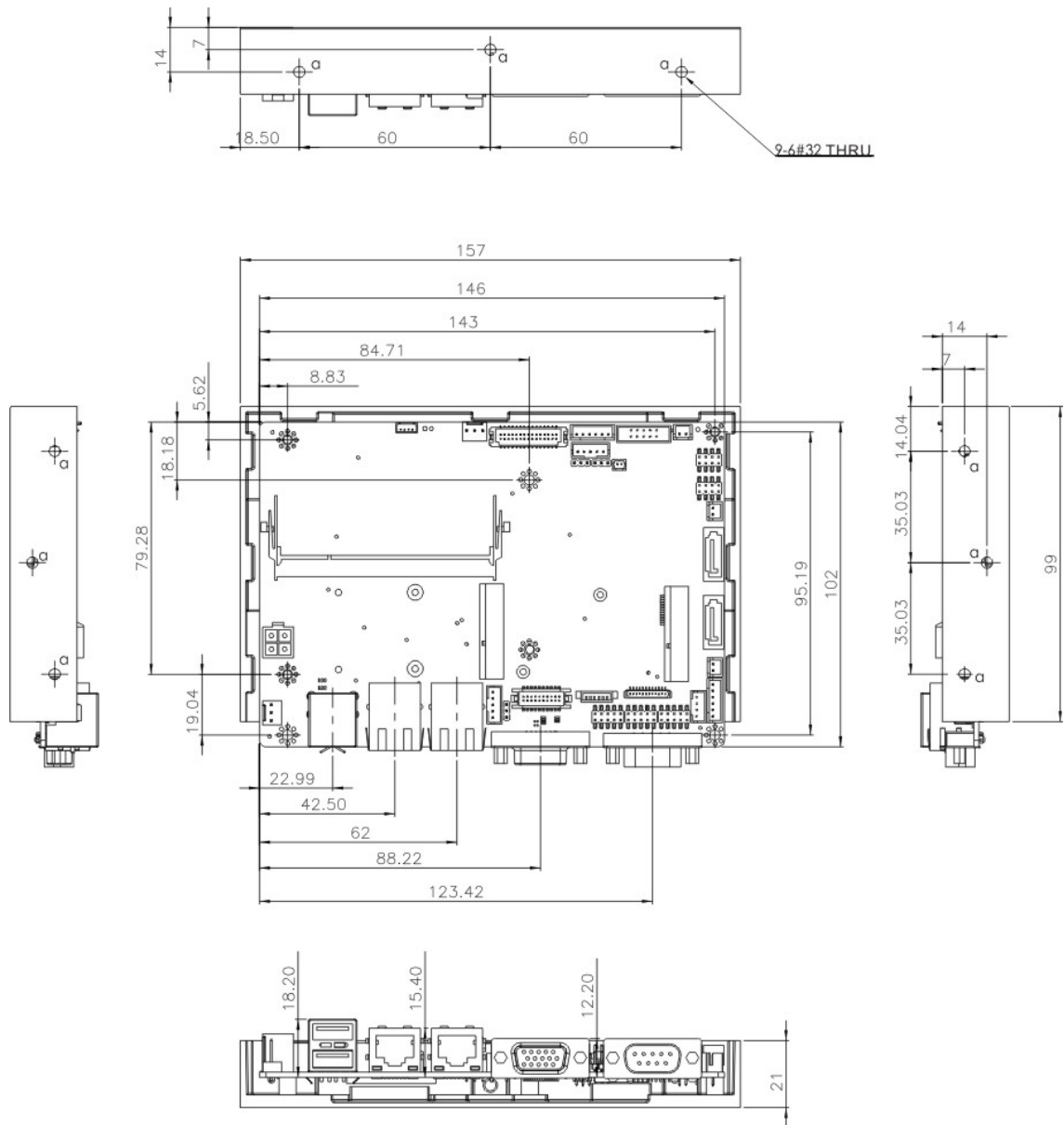
Figure 1-2: Connectors



WAFER-CV-D25501/N26001 3.5" SBC

1.4 Dimensions

The main dimensions of the WAFER-CV-D25501/N26001 are shown in the diagram below.



WAFER-CV-D25501/N26001 3.5" SBC

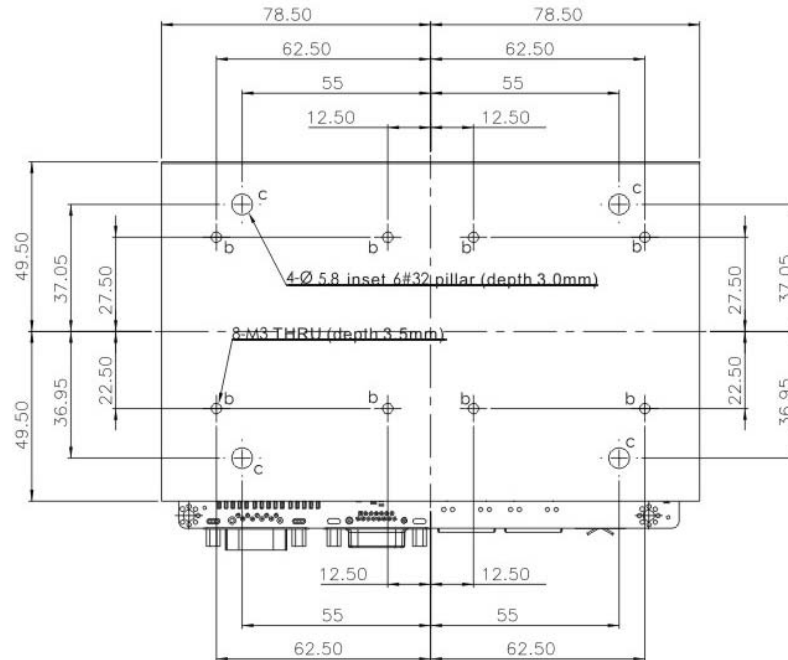


Figure 1-3: WAFER-CV-D25501/N26001 Dimensions (mm)

1.5 Data Flow

Figure 1-4 shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

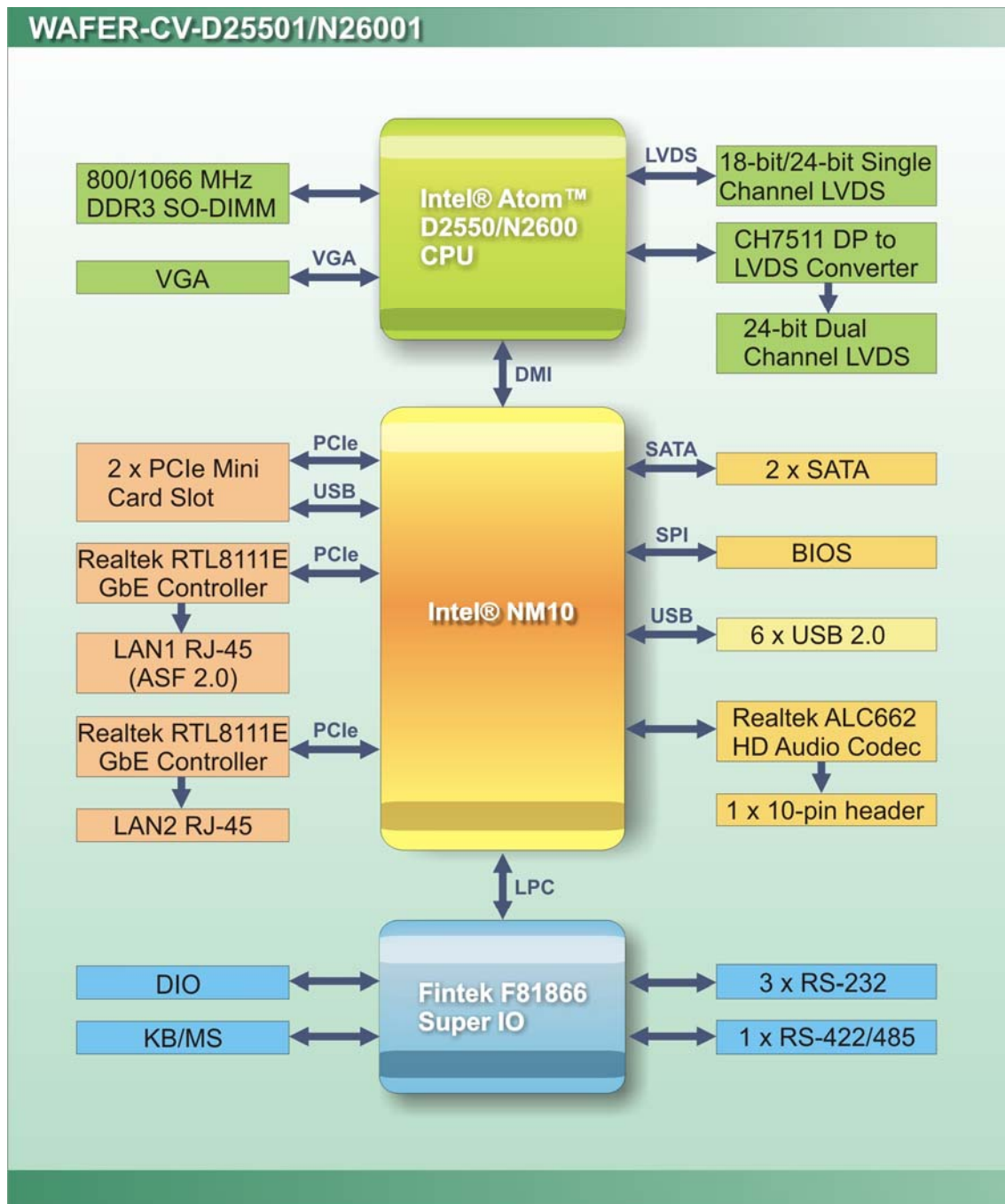


Figure 1-4: Data Flow Diagram

WAFER-CV-D25501/N26001 3.5" SBC

1.6 Technical Specifications

The WAFER-CV-D25501/N26001 technical specifications are listed below.

Specification/Model	WAFER-CV-D25501	WAFER-CV-N26001
Form Factor	3.5"	
System CPU	Intel® Atom™ D2550 1.86 GHz	Intel® Atom™ N2600 1.6 GHz
System Chipset	Intel® NM10	
Memory	One 1066 MHz DDR3/DDR3L (1.35V) SO-DIMM support (up to 4 GB)	One 800 MHz DDR3/DDR3L (1.35V) SO-DIMM support (up to 2 GB)
Graphics Engine	Intel® GMA 3650 with a 640 MHz graphics core	Intel® GMA 3600 with a 400 MHz graphics core
Display	Dual display supported One VGA One LVDS1 is integrated in the Intel® Atom™ D2550/N2600 processor One LVDS2 is driven by the Chrontel CH7511 DP to LVDS converter	
	24-bit single-channel LVDS1 with up to 1440x900 resolution	18-bit single-channel LVDS1 with up to 1366x768 resolution
	24-bit dual-channel LVDS2 with up to 1920x1200 resolution	24-bit dual-channel LVDS2 with up to 1600x1200 resolution
Ethernet	Dual Realtek RTL8111E PCIe GbE controller (LAN1 with ASF 2.0 support)	
BIOS	UEFI BIOS	
Super I/O Controller	Fintek F81866	
Watchdog Timer	Software programmable supports 1~255 sec. system reset	
Expansion	One full-size PCIe Mini card slot with mSATA support One half-size PCIe Mini card slot	
Audio	Realtek ALC662 HD Audio codec	
COM	Three RS-232 (one by external connector; two by on-board pin headers) One RS-422/485 by internal 4-pin wafer connector	
Digital I/O	One 8-bit digital input/output connector (4-bit input/4-bit output)	

Specification/Model	WAFER-CV-D25501	WAFER-CV-N26001
Fan	One 3-pin CPU fan connector One 3-pin system fan connector	
Keyboard/mouse	One internal pin-header connector	
SATA	Two SATA 3Gb/s ports with 5V power	
USB	Six USB 2.0/1.1 devices supported: Two by external connectors Four by on-board pin headers	
Power Supply	12 V only AT and ATX support One internal 4-pin (2x2) power connector	
Power Consumption	12V @ 1.53 A (1.86 GHz Intel® Atom™ D2550 with 1 GB 1066 MHz DDR3 SO-DIMM memory)	12V @ 1.15 A (1.6 GHz Intel® Atom™ N2600 with 1 GB 1066 MHz DDR3 SO-DIMM memory)
Operating Temperature	-20°C ~ 60°C with free air -20°C ~ 70°C with force air	-20°C ~ 70°C with free air -20°C ~ 75°C with force air
Storage Temperature	-30°C ~ 80°C	-30°C ~ 85°C
Humidity (Operating)	5% ~ 95% (non-condensing)	
Dimensions (LxW)	146 mm x 102 mm	
Weight (GW/NW)	600 g/250 g	

Table 1-2: WAFER-CV-D25501/N26001 Specifications

Chapter

2

Packing List

2.1 Anti-static Precautions



WARNING!

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Make sure to adhere to the following guidelines:

- ***Wear an anti-static wristband:*** Wearing an anti-static wristband can prevent electrostatic discharge.
- ***Self-grounding:*** Touch a grounded conductor every few minutes to discharge any excess static buildup.
- ***Use an anti-static pad:*** When configuring any circuit board, place it on an anti-static mat.
- ***Only handle the edges of the PCB:*** Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

2.2 Unpacking Precautions







When the WAFER-CV-D25501/N26001 is unpacked, please do the following:

- Follow the antistatic guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

WAFER-CV-D25501/N26001 3.5" SBC**2.3 Packing List****NOTE:**

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the WAFER-CV-D25501/N26001 was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The WAFER-CV-D25501/N26001 is shipped with the following components:

Quantity	Item and Part Number	Image
1	WAFER-CV-D25501/N26001 motherboard	
1	SATA and power cable (P/N: 32801-000201-100-RS)	
1	Audio cable (P/N: 32000-072100-RS)	
1	RS-232 cable (P/N: 32205-002700-100-RS)	
1	KB/MS cable (P/N: 32000-023800-RS)	
1	Power cable (P/N: 32100-087100-RS)	





Quantity	Item and Part Number	Image
1	Mini jumper pack	
1	One Key Recovery CD	
1	Utility CD	
1	Quick Installation Guide	

Table 2-1: Packing List

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
Dual USB cable (wo bracket) (P/N: 32001-008600-100-RS)	
RS-422/485 cable (200 mm) (P/N: 32205-003800-100-RS)	

Table 2-2: Optional Items

Chapter

3

Connectors

3.1 Peripheral Interface Connectors

This chapter details all the jumpers and connectors.

3.1.1 WAFER-CV-D25501/N26001 Layout

The figure below shows all the connectors and jumpers.

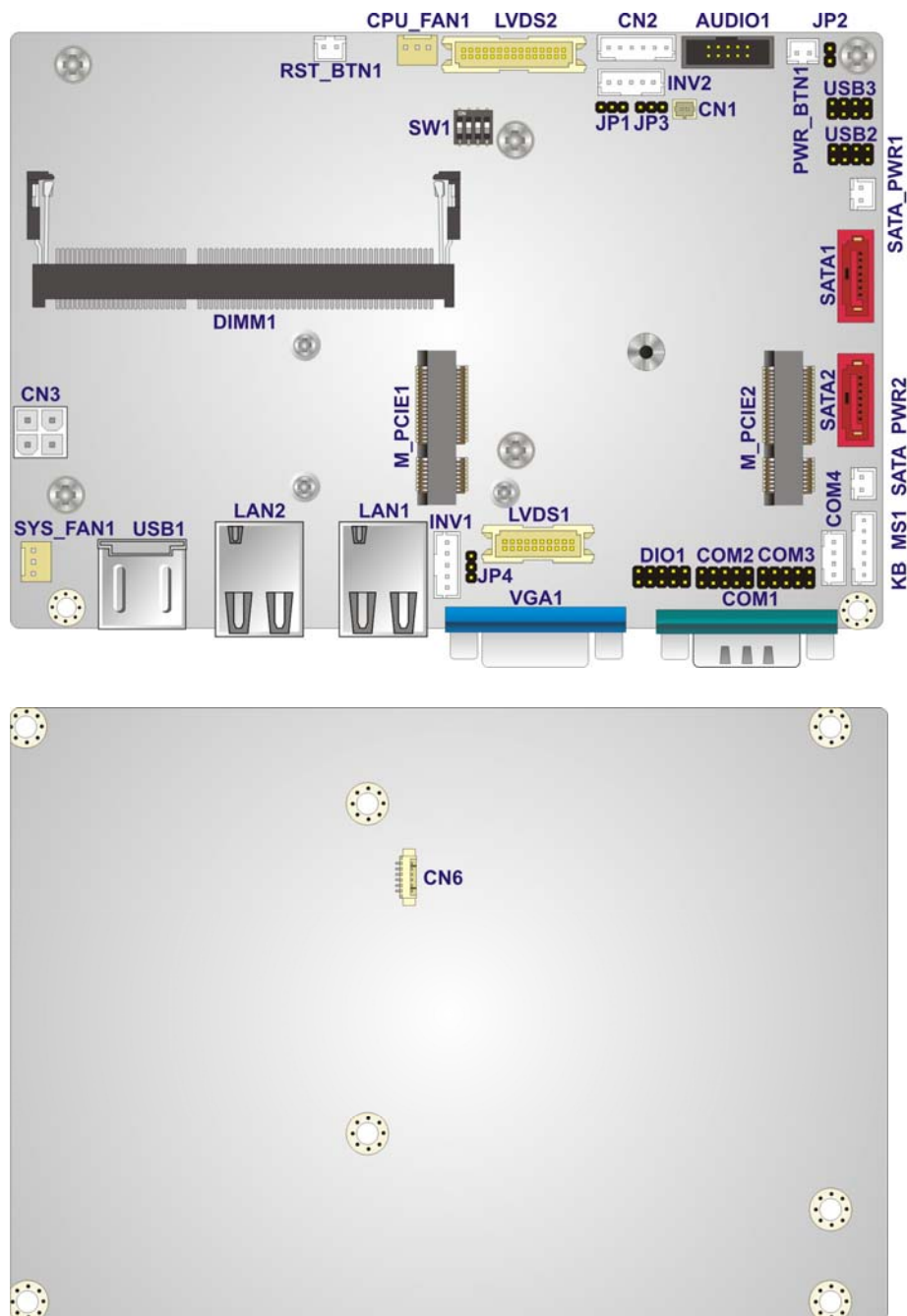


Figure 3-1: Connectors and Jumpers

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
5 V SATA power connectors	2-pin wafer	SATA_PWR1, SATA_PWR2
12 V power connector	4-pin Molex power connector	CN3
Audio connector	10-pin box header	AUDIO1
Backlight inverter connectors	5-pin wafer	INV1, INV2
Battery connector	2-pin wafer	CN1
Digital Input/Output (DIO) connector	10-pin header	DIO1
Fan connectors	3-pin wafer	CPU_FAN1, SYS_FAN2
Keyboard and mouse connector	6-pin wafer	KB_MS1
LVDS connectors	20-pin/30-pin crimp	LVDS1, LVDS2
LVDS2 backlight control connector	6-pin wafer	CN6
PCIe Mini card slots	52-pin PCIe Mini	M_PCIE1, M_PCIE2
Power & HDD LED connector	6-pin header	CN2
Power button connector	2-pin wafer	PWR_BTN1
Reset button connector	2-pin wafer	RST_BTN1
RS-232 serial port connectors	10-pin header	COM2, COM3
RS-422/485 serial port connector	4-pin wafer	COM4
Serial ATA (SATA) drive connectors	7-pin SATA	SATA1, SATA2
USB 2.0 connectors	8-pin header	USB2, USB3

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Panel Connectors

The table below lists the connectors on the external I/O panel.

Connector	Type	Label
Dual USB port	Dual USB port	USB1
Ethernet connectors	RJ-45	LAN1, LAN2
RS-232 serial port connector	Male DB-9	COM1
VGA connector	15-pin female	VGA1

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the WAFER-CV-D25501/N26001.

3.2.1 5 V SATA Power Connectors

- CN Label:

SATA_PWR1, SATA_PWR2
- CN Type:

2-pin wafer
- CN Location:

See Figure 3-2
- CN Pinouts:

See Table 3-3

Use the 5 V SATA power connectors to connect to SATA device power connection.

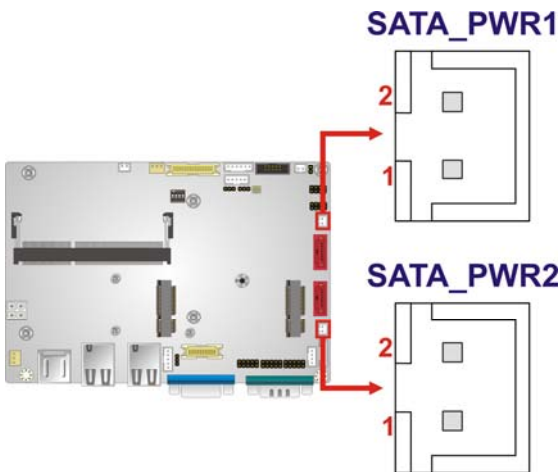


Figure 3-2: 5 V SATA Power Connector Locations

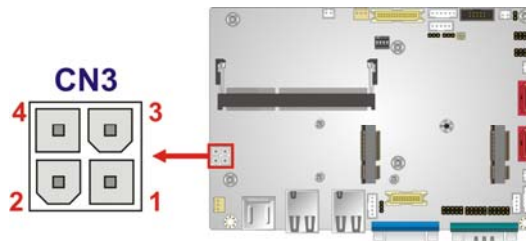
WAFER-CV-D25501/N26001 3.5" SBC

Pin No.	Description
1	+5V
2	Ground

Table 3-3: 5 V SATA Power Connector Pinouts**3.2.2 12 V Power Connector**

CN Label:	CN3
CN Type:	4-pin Molex power connector
CN Location:	See Figure 3-3
CN Pinouts:	See Table 3-4

The ATX power connector connects to an ATX power supply.

**Figure 3-3: 12 V Power Connector Location**

Pin	Description
1	GND
2	GND
3	+12V
4	+12V

Table 3-4: 12 V Power Connector Pinouts**3.2.3 Audio Connector**

CN Label:	AUDIO1
CN Type:	10-pin box header
CN Location:	See Figure 3-4
CN Pinouts:	See Table 3-5

The 10-pin audio connector is connected to external audio devices including speakers and microphones for the input and output of audio signals to and from the system.

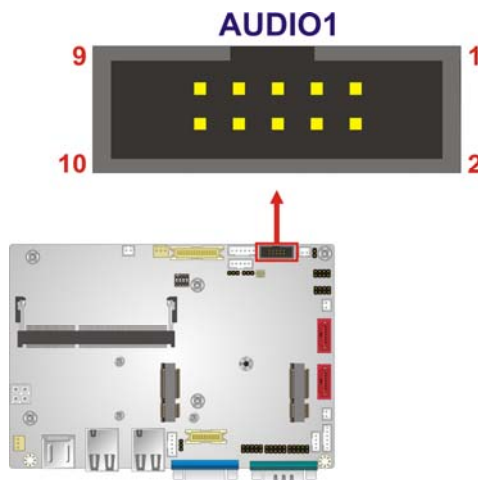


Figure 3-4: Audio Connector Location

Pin	Description	Pin	Description
1	Line-out_R	2	Line-in_R
3	AUD_GND	4	AUD_GND
5	Line-out_L	6	Line-in_L
7	AUD_GND	8	AUD_GND
9	MIC1_R	10	MIC1_L

Table 3-5: Audio Connector Pinouts

3.2.4 Backlight Inverter Connectors

- CN Label:** INV1, INV2
- CN Type:** 5-pin wafer
- CN Location:** See **Figure 3-5**
- CN Pinouts:** See **Table 3-6**

The backlight inverter connectors provide the backlights on the LCD display connected to the WAFFER-CV-D25501/N26001 with +12V of power.

WAFER-CV-D25501/N26001 3.5" SBC

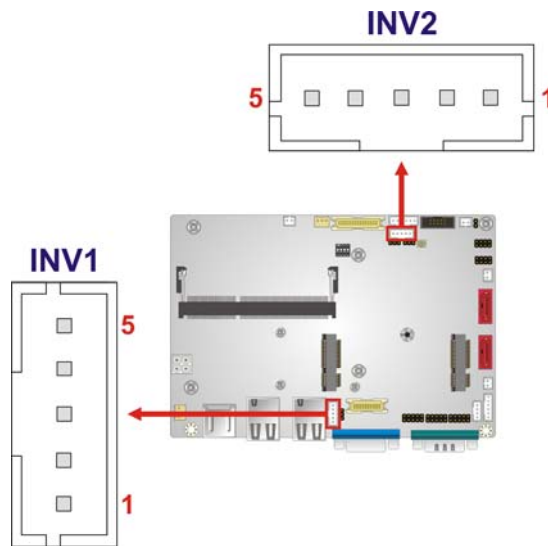


Figure 3-5: Backlight Inverter Connector Locations

Pin	Description
1	LCD_BKLTCTL
2	GROUND
3	+12V
4	GROUND
5	LCD_BKLEN

Table 3-6: Backlight Inverter Connector Pinouts

3.2.5 Battery Connector



CAUTION:

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

CN Label: CN1

CN Type: 2-pin wafer

CN Location: See **Figure 3-6**

CN Pinouts: See **Table 3-7**

This is connected to the system battery. The battery provides power to the system clock to retain the time when power is turned off.

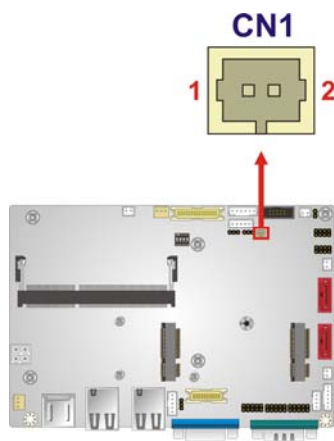


Figure 3-6: Battery Connector Location

Pin	Description
1	Battery+
2	GND

Table 3-7: Battery Connector Pinouts

3.2.6 Digital Input/Output (DIO) Connector

CN Label: DIO1

CN Type: 10-pin header

CN Location: See **Figure 3-7**

CN Pinouts: See **Table 3-8**

The digital input/output connector is managed through a Super I/O chip. The DIO connector pins are user programmable.

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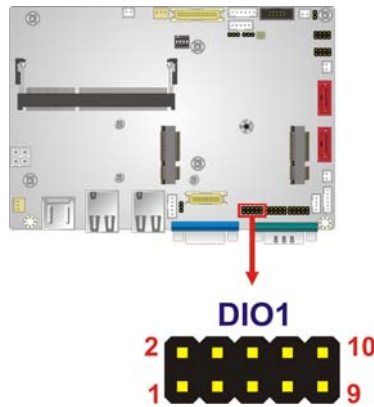


Figure 3-7: Digital I/O Connector Location

Pin	Description	Pin	Description
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 3-8: Digital I/O Connector Pinouts

3.2.7 Fan Connectors

CN Label: CPU_FAN1, SYS_FAN1

CN Type: 3-pin wafer

CN Location: See Figure 3-8

CN Pinouts: See Table 3-9

The fan connectors attach to the CPU/system cooling fans.

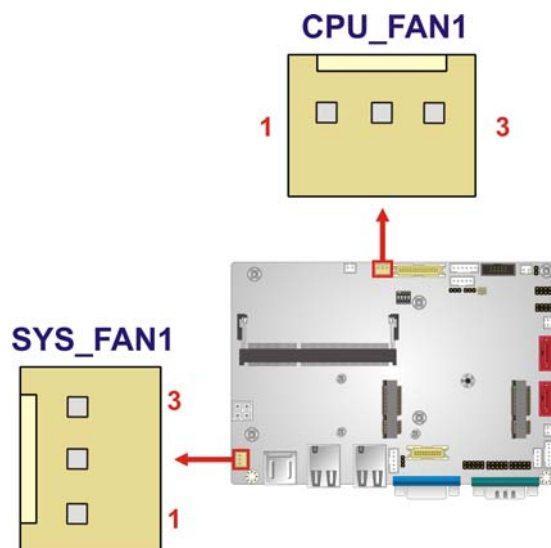


Figure 3-8: Fan Connector Locations

PIN NO.	DESCRIPTION
1	GND
2	+12 V
3	Fan Speed Detect

Table 3-9: Fan Connector Pinouts

3.2.8 Keyboard/Mouse Connector

CN Label: KB_MS1

CN Type: 6-pin wafer

CN Location: See **Figure 3-9**

CN Pinouts: See **Table 3-10**

The keyboard and mouse connector can be connected to a standard PS/2 cable or PS/2 Y-cable to add keyboard and mouse functionality to the system.

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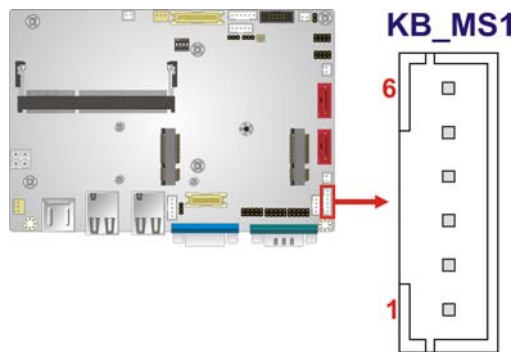


Figure 3-9: Keyboard/Mouse Connector Location

Pin	Description
1	+5 V KB DATA
2	MS DATA
3	MS CLK
4	KB DATA
5	KB CLK
6	GROUND

Table 3-10: Keyboard/Mouse Connector Pinouts

3.2.9 LVDS1 Connector

CN Label:	LVDS1
CN Type:	20-pin crimp
CN Location:	See Figure 3-10
CN Pinouts:	See Table 3-11

The 20-pin LVDS LCD connector can be connected to an 18-bit/24-bit single-channel LVDS panel.

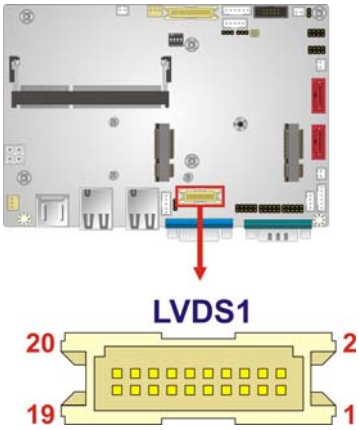


Figure 3-10: LVDS1 Connector Location

Pin	Description	Pin	Description
1	GND	2	GND
3	LVDS_DATA0	4	LVDS_DATA0#
5	LVDS_DATA1	6	LVDS_DATA1#
7	LVDS_DATA2	8	LVDS_DATA2#
9	LVDS_CLK	10	LVDS_CLK#
11	LVDS_DATA3	12	LVDS_DATA3#
13	GND	14	GND
15	LDDC_DATA	16	LDDC_CLK
17	VCC_LCD	18	VCC_LCD
19	VCC_LCD	20	VCC_LCD

Table 3-11: LVDS1 Connector Pinouts

3.2.10 LVDS2 Connector

- CN Label:** LVDS2
- CN Type:** 30-pin crimp
- CN Location:** See **Figure 3-11**
- CN Pinouts:** See **Table 3-12**

The 30-pin LVDS LCD connector can be connected to a 24-bit dual-channel LVDS panel.

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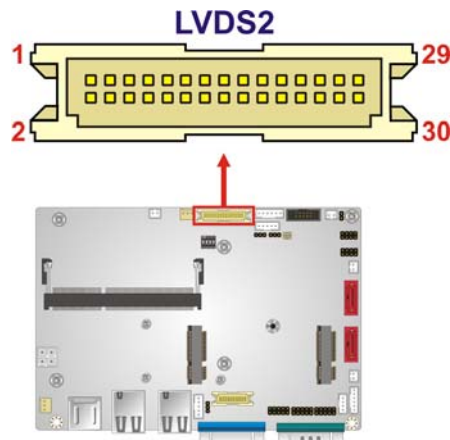


Figure 3-11: LVDS2 Connector Location

Pin	Description	Pin	Description
1	GND	2	GND
3	LVDS_DATA0	4	LVDS_DATA0#
5	LVDS_DATA1	6	LVDS_DATA1#
7	LVDS_DATA2	8	LVDS_DATA2#
9	LVDS_CLK1	10	LVDS_CLK1#
11	LVDS_DATA3	12	LVDS_DATA3#
13	GND	14	GND
15	LVDS_DATA4	16	LVDS_DATA4#
17	LVDS_DATA5	18	LVDS_DATA5#
19	LVDS_DATA6	20	LVDS_DATA6#
21	LVDS_CLK2	22	LVDS_CLK2#
23	LVDS_DATA7	24	LVDS_DATA7#
25	GND	26	GND
27	VCC_LCD	28	VCC_LCD
29	VCC_LCD	30	VCC_LCD

Table 3-12: LVDS2 Connector Pinouts

3.2.11 LVDS2 Backlight Control Connector

CN Label: CN6

CN Type: 6-pin wafer

CN Location: See **Figure 3-12**

CN Pinouts: See **Table 3-13**

This connector allows control of the LVDS2 panel backlight.

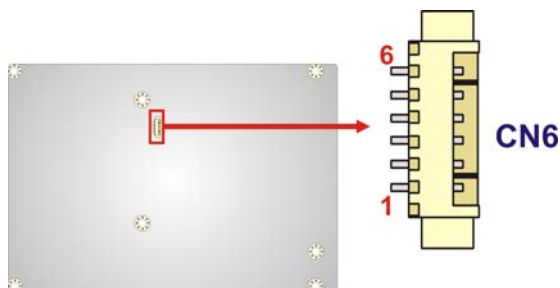


Figure 3-12: LVDS2 Backlight Control Connector Location

Function	Pin	Description
Panel power button	1	PWRDN
	2	GND
Panel brightness +	3	BLUP
	4	GND
Panel brightness -	5	BLDN
	6	GND

Table 3-13: LVDS2 Backlight Control Connector Pinouts

3.2.12 PCIe Mini Card Slots

CN Label: M_PCIE1, M_PCIE2

CN Type: 52-pin PCIe Mini card slot

CN Location: See **Figure 3-13**

CN Pinouts: See **Table 3-14**

The **M_PCIE2** slot can be connected to a full-size PCIe Mini card while the **M_PCIE1** slot can be connected to a half-size PCIe Mini card.

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NOTE:

The **M_PCIE2** slot supports mSATA devices.

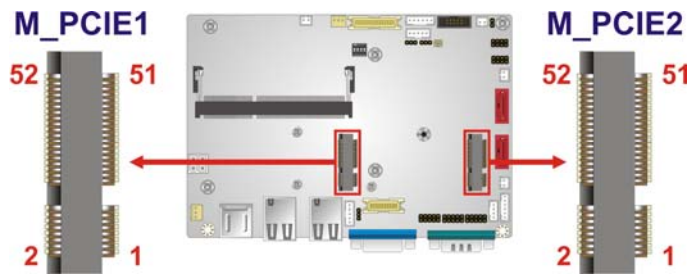


Figure 3-13: PCIe Mini Card Slot Locations

Pin	Description	Pin	Description
1	PCIE_WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	1.5V
7	N/C	8	N/C
9	GND	10	N/C
11	PCIE_CLK#	12	N/C
13	PCIE_CLK	14	N/C
15	GND	16	N/C
17	N/C	18	GND
19	N/C	20	N/C
21	GND	22	PCIRST#
23	PCIE_RXN	24	VCC3
25	PCIE_RXP	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PCIE_TXN	32	SMBDATA
33	PCIE_TXP	34	GND
35	GND	36	USBD-

Pin	Description	Pin	Description
37	GND	38	USBD+
39	VCC3	40	GND
41	VCC3	42	N/C
43	GND	44	N/C
45	N/C	46	N/C
47	N/C	48	1.5V
49	N/C	50	GND
51	N/C	52	VCC3

Table 3-14: PCIe Mini Card Slot Pinouts

3.2.13 Power & HDD LED Connector

- CN Label:

CN2
- CN Type:

6-pin wafer
- CN Location:

See Figure 3-14
- CN Pinouts:

See Table 3-15

The LED connector connects to an HDD indicator LED and a power LED on the system chassis to inform the user about HDD activity and the power on/off status of the system.

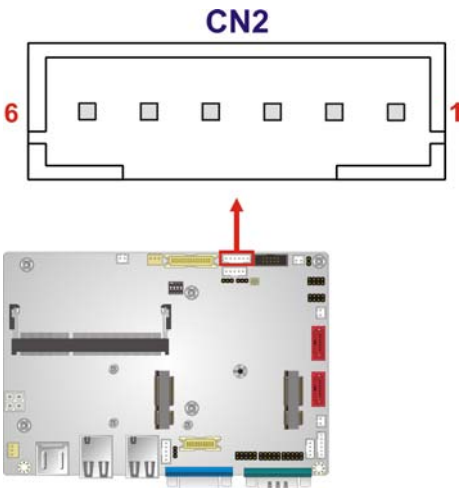


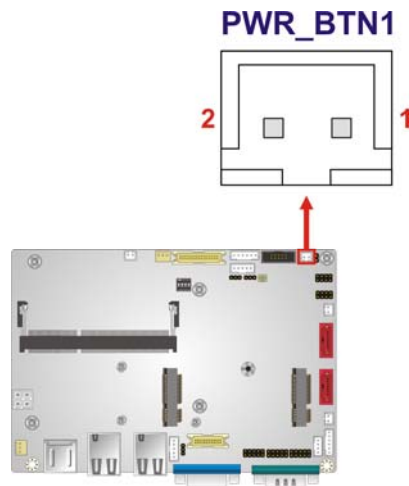
Figure 3-14: Power & HDD LED Connector Location

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Pin	Description
1	+5V
2	GND
3	Power LED+
4	Power LED-
5	HDD LED+
6	HDD LED-

Table 3-15: Power & HDD LED Connector Pinouts**3.2.14 Power Button Connector****CN Label:** PWR_BTN1**CN Type:** 2-pin wafer**CN Location:** See **Figure 3-15****CN Pinouts:** See **Table 3-16**

The power button connector is connected to a power switch on the system chassis to enable users to turn the system on and off.

**Figure 3-15: Power Button Connector Location**

Pin	Description
1	PWR_BTN+
2	PWR_BTN-

Table 3-16: Power Button Connector Pinouts

3.2.15 Reset Button Connector

- CN Label:

RST_BTN1
- CN Type:

2-pin wafer
- CN Location:

See Figure 3-16
- CN Pinouts:

See Table 3-17

The reset button connector is connected to a reset switch on the system chassis to enable users to reboot the system when the system is turned on.

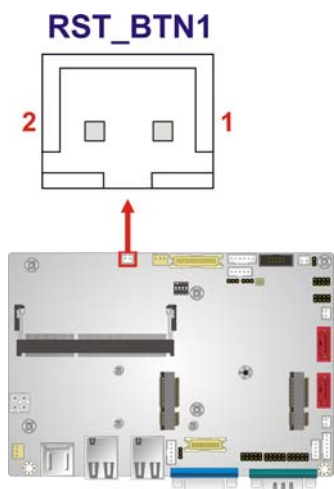


Figure 3-16: Reset Button Connector Location

Pin	Description
1	RESET+
2	RESET-

Table 3-17: Reset Button Connector Pinouts

3.2.16 RS-232 Serial Port Connectors

- CN Label:

COM2, COM3
- CN Type:

10-pin header
- CN Location:

See Figure 3-17
- CN Pinouts:

See Table 3-18

Each of these connectors provides RS-232 connections.

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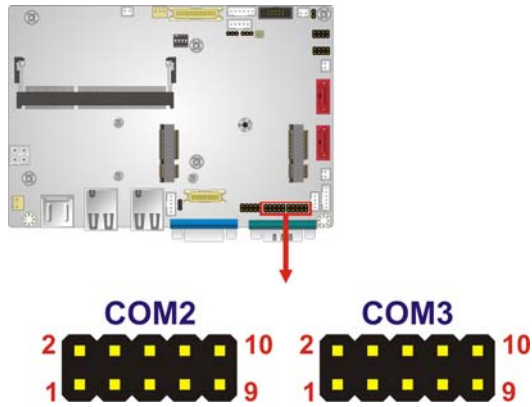


Figure 3-17: RS-232 Serial Port Connector Locations

Pin	Description	Pin	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

Table 3-18: RS-232 Serial Port Connector Pinouts

3.2.17 RS-422/485 Serial Port Connector

CN Label: COM4

CN Type: 4-pin wafer

CN Location: See **Figure 3-18**

CN Pinouts: See **Table 3-19**



NOTE:

These pins are shared with those on the main serial port. Use either the pins on the main connector, or on this connector, but not both.

This connector provides RS-422 or RS-485 communications.

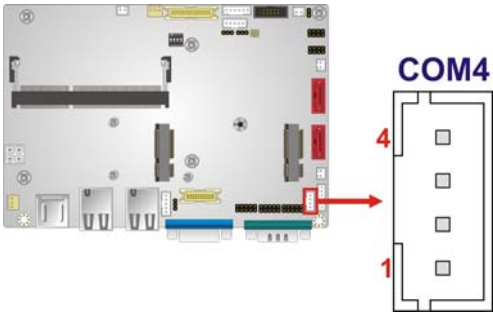


Figure 3-18: RS-422/485 Connector Location

Pin	Description	Pin	Description
1	RXD422-	3	TXD422+ /TXD485 +
2	RXD422+	4	TXD422- /TXD485-

Table 3-19: RS-422/485Connector Pinouts

3.2.18 SATA Drive Connectors

- CN Label:

SATA1, SATA2
- CN Type:

7-pin SATA drive connector
- CN Location:

See Figure 3-19
- CN Pinouts:

See Table 3-20

The SATA drive connectors can be connected to SATA drives and support up to 3Gb/s data transfer rate.

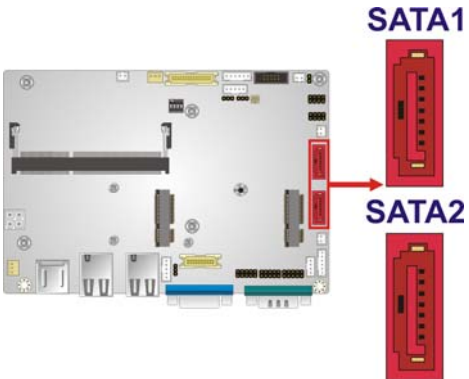


Figure 3-19: SATA Drive Connector Locations

WAFER-CV-D25501/N26001 3.5" SBC

Pin	Description
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 3-20: SATA Drive Connector Pinouts

3.2.19 USB Connectors

CN Label: USB2, USB3

CN Type: 8-pin header

CN Location: See **Figure 3-20**

CN Pinouts: See **Table 3-21**

Each USB connector provides connectivity to two USB 1.1/2.0 ports.

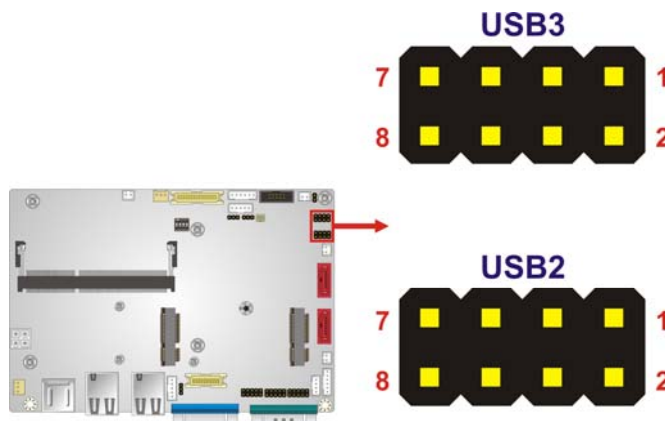


Figure 3-20: USB Connector Locations

Pin	Description	Pin	Description
1	USB_VCC	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-

Pin	Description	Pin	Description
7	GND	8	USB_VCC

Table 3-21: USB Connector Pinouts

3.3 External Peripheral Interface Connector Panel

The figure below shows the external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

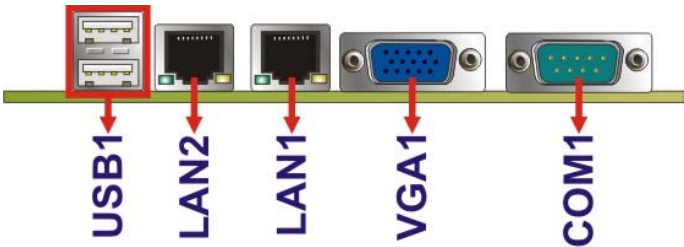


Figure 3-21: External Peripheral Interface Connector

3.3.1 Ethernet Connectors

- CN Label:** LAN1, LAN2
- CN Type:** RJ-45 connector
- CN Location:** See Figure 3-21
- CN Pinouts:** See Table 3-22

The WAFER-CV-D25501/N26001 is equipped with two built-in RJ-45 Ethernet controllers. Each controller can connect to the LAN through one RJ-45 LAN connector.

Pin	Description	Pin	Description
1	LAN1_MDIO+	5	LAN1_MDI2+
2	LAN1_MDIO-	6	LAN1_MDI2-
3	LAN1_MDI1+	7	LAN1_MDI3+
4	LAN1_MDI1-	8	LAN1_MDI3-

Table 3-22: LAN Pinouts

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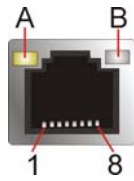


Figure 3-22: RJ-45 Ethernet Connector

LED	Description	LED	Description
A	on: linked blinking: data is being sent/received	B	off: 10 Mb/s green: 100 Mb/s orange: 1000 Mb/s

Table 3-23: RJ-45 Ethernet Connector LEDs

3.3.2 Serial Port Connector (COM1)

- CN Label:** COM1
- CN Type:** Male DB-9 connector
- CN Location:** See **Figure 3-21**
- CN Pinouts:** See **Table 3-24** and **Figure 3-23**

The serial port connects to a RS-232 serial communications device.

Pin	Description	Pin	Description
1	DATA CARRIER DETECT (DCD)	6	DATA SET READY (DSR)
2	RECEIVE DATA (RXD)	7	REQUEST TO SEND (RTS)
3	TRANSMIT DATA (TXD)	8	CLEAR TO SEND (CTS)
4	DATA TERMINAL READY (DTR)	9	RING INDICATOR (RI)
5	GND		

Table 3-24: RS-232 Serial Port (COM 1) Pinouts

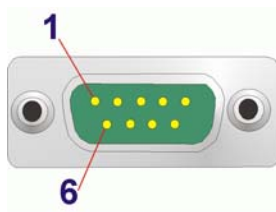


Figure 3-23: COM1 Pinout Locations

3.3.3 USB Connectors

- CN Label:** USB1
- CN Type:** Dual USB port
- CN Location:** See **Figure 3-21**
- CN Pinouts:** See **Table 3-25**

The ports connect to both USB 2.0 and USB 1.1 devices.

Pin	Description	Pin	Description
1	USB_VCC	2	USB_VCC
3	DATA-	4	DATA-
5	DATA+	6	DATA+
7	GND	8	GND

Table 3-25: USB Port Pinouts

3.3.4 VGA Connector

- CN Label:** VGA1
- CN Type:** 15-pin Female
- CN Location:** See **Figure 3-21**
- CN Pinouts:** See **Figure 3-24** and **Table 3-26**

The VGA connector connects to a monitor that accepts a standard VGA input.

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Pin	Description	Pin	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VGA VCC	10	GND
11	NC	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 3-26: VGA Connector Pinouts

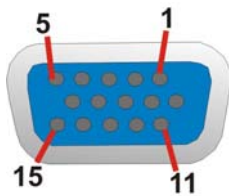


Figure 3-24: VGA Connector

**NOTE:**

Due to Intel® GMA driver limitation, the monitor connected to the VGA connector may become extended desktop or not have signal to it after restarting from the graphics driver installation. To work out this limitation, press the Ctrl+Alt+F1 hotkey to switch the primary display to CRT mode.

Chapter

4

Installation

WAFER-CV-D25501/N26001 3.5" SBC

4.1 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during the installation of the WAFER-CV-D25501/N26001 may result in permanent damage to the WAFER-CV-D25501/N26001 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the WAFER-CV-D25501/N26001. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the WAFER-CV-D25501/N26001 or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding:*** - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring the WAFER-CV-D25501/N26001, place it on an anti-static pad. This reduces the possibility of ESD damaging the WAFER-CV-D25501/N26001.
- ***Only handle the edges of the PCB:-*** When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations

**NOTE:**

The following installation notices and installation considerations should be read and understood before installation. All installation notices must be strictly adhered to. Failing to adhere to these precautions may lead to severe damage and injury to the person performing the installation.

**WARNING:**

The installation instructions described in this manual should be carefully followed in order to prevent damage to the components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
 - The user manual provides a complete description of the WAFER-CV-D25501/N26001 installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
 - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the WAFER-CV-D25501/N26001 on an antistatic pad:
 - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the WAFER-CV-D25501/N26001 off:
 - When working with the WAFER-CV-D25501/N26001, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the WAFER-CV-D25501/N26001 **DO NOT:**

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

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4.3 SO-DIMM Installation

**WARNING:**

Using incorrectly specified SO-DIMM may cause permanent damage to the WAFER-CV-D25501/N26001. Please make sure the purchased SO-DIMM complies with the memory specifications of the WAFER-CV-D25501/N26001. SO-DIMM specifications compliant with the WAFER-CV-D25501/N26001 are listed in Chapter 1.

To install a SO-DIMM into a SO-DIMM socket, please follow the steps below and refer to **Figure 4-1**.

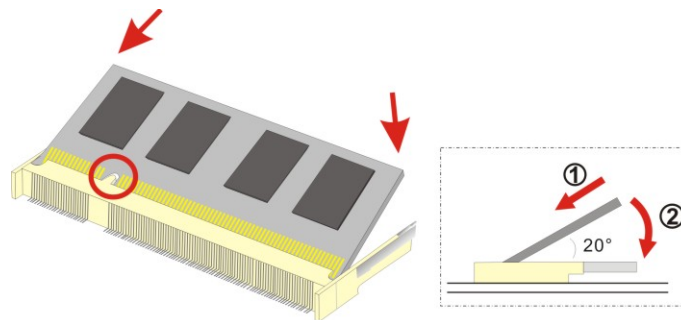


Figure 4-1: SO-DIMM Installation

- Step 1:** **Locate the SO-DIMM socket.** Place the WAFER-CV-D25501/N26001 on an anti-static pad with the solder side facing up.
- Step 2:** **Align the SO-DIMM with the socket.** The SO-DIMM must be oriented in such a way that the notch in the middle of the SO-DIMM must be aligned with the plastic bridge in the socket.
- Step 3:** **Insert the SO-DIMM.** Push the SO-DIMM chip into the socket at an angle. (See **Figure 4-1**)
- Step 4:** **Open the SO-DIMM socket arms.** Gently pull the arms of the SO-DIMM socket out and push the rear of the SO-DIMM down. (See **Figure 4-1**)

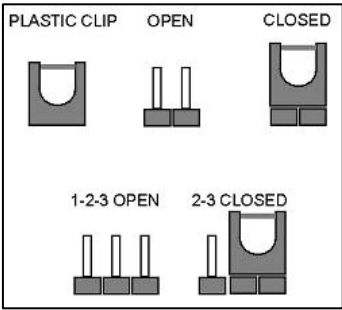
Step 5: **Secure the SO-DIMM.** Release the arms on the SO-DIMM socket. They clip into place and secure the SO-DIMM in the socket.

4.4 Jumper Settings



NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.



The hardware jumpers must be set before installation. Jumpers are shown in **Table 4-1**.

Description	Label	Type
AT/ATX power selection	JP2	2-pin header
Clear CMOS	JP3	3-pin header
LVDS1 voltage selection	JP4	3-pin header
LVDS2 voltage selection	JP1	3-pin header
LVDS2 panel type selection	SW1	4-pin switch

Table 4-1: Jumpers

4.4.1 AT/ATX Power Selection Jumper

- Jumper Label:

JP2
- Jumper Type:

2-pin header
- Jumper Settings:

See **Table 4-2**
- Jumper Location:

See **Figure 4-2**

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The AT/ATX power selection jumper specifies the system power mode as AT or ATX.

Setting	Description
Short 1-2	Use ATX power (Default)
Off	Use AT power

Table 4-2: AT/ATX Power Selection Jumper Settings

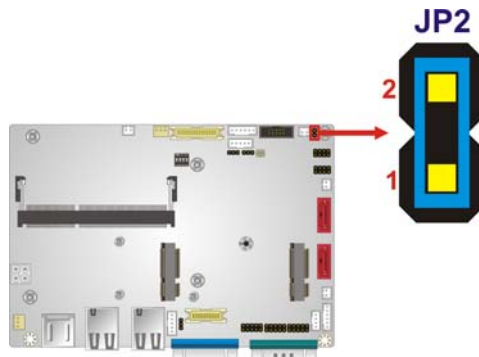


Figure 4-2: AT/ATX Power Selection Jumper Location

4.4.2 Clear CMOS Jumper

Jumper Label:	JP3
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-3
Jumper Location:	See Figure 4-3

To reset the BIOS, move the jumper to the "Clear BIOS" position for 3 seconds or more, and then move back to the default position.

Setting	Description
Short 1-2	Normal
Short 2-3	Clear BIOS

Table 4-3: Clear CMOS Jumper Settings

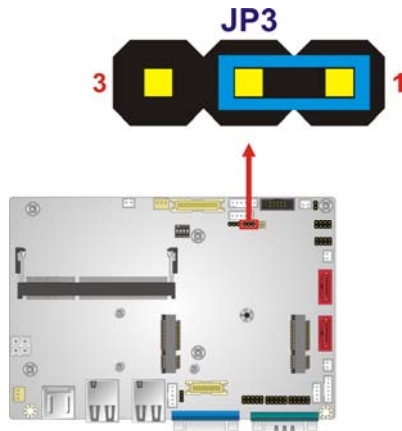


Figure 4-3: Clear CMOS Jumper Location

4.4.3 LVDS1 Voltage Selection



WARNING:

Permanent damage to the screen and WAFER-CV-D25501/N26001 may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that came with the monitor to select the correct voltage.

Jumper Label:	JP4
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-4
Jumper Location:	See Figure 4-4

Sets the voltage provided to the monitor by LVDS1.

Setting	Description
Short 1-2	+3.3V LVDS (Default)
Short 2-3	+5V LVDS

Table 4-4: LVDS1 Voltage Selection Jumper Settings

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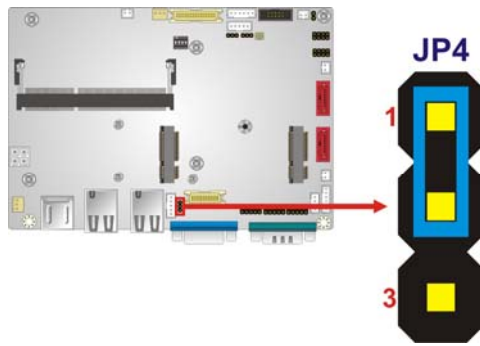


Figure 4-4: LVDS1 Voltage Selection Jumper Location

4.4.4 LVDS2 Voltage Selection



WARNING:

Permanent damage to the screen and WAFER-CV-D25501/N26001 may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that came with the monitor to select the correct voltage.

Jumper Label:	JP1
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-5
Jumper Location:	See Figure 4-5

Sets the voltage provided to the monitor connected to LVDS2.

Setting	Description
Short 1-2	+3.3V LVDS (Default)
Short 2-3	+5V LVDS

Table 4-5: LVDS2 Voltage Selection Jumper Settings

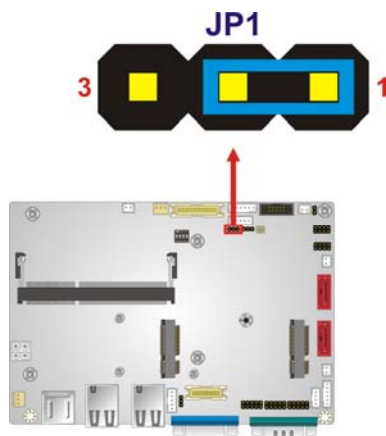


Figure 4-5: LVDS2 Voltage Selection Jumper Location

4.4.5 LVDS2 Panel Type Selection Jumper

- Jumper Label:

SW1
- Jumper Type:

4-pin switch
- Jumper Settings:

See Table 4-6
- Jumper Location:

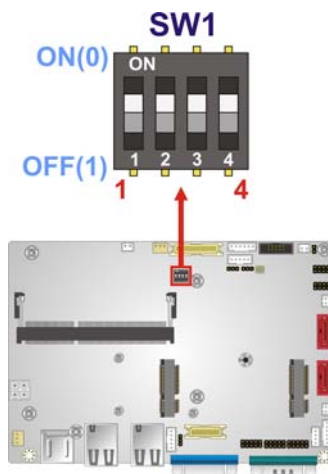
See Figure 4-6

Sets the panel type of the LVDS2 video channel.

Pin No. 4321	EDID Resolution	Color Depth	Channel
0000	800 x 600 @ 60 Hz	18-bit	Single
0001	1024 x 768 @ 60Hz	18-bit	Single
0010	1024 x 768 @ 60Hz	24-bit	Single
0011	1280 x 768 @ 60Hz	18-bit	Single
0100	1280 x 800 @ 60Hz	18-bit	Single
0101	1280 x 960 @ 60Hz	18-bit	Single
0110	1280 x 1024 @ 60Hz	24-bit	Dual
0111	1366 x 768 @ 60Hz	18-bit	Single
1000	1366 x 768 @ 60Hz	24-bit	Single
1001	1440 x 900 @ 60Hz	24-bit	Dual
1010	1440 x 1050 @ 60Hz	24-bit	Dual
1011	1600 x 900 @ 60Hz	24-bit	Dual

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Pin No. 4321	EDID Resolution	Color Depth	Channel
1100	1680 x 1050 @ 60Hz	24-bit	Dual
1101	1600 x 1200 @ 60Hz	24-bit	Dual
1110	1920 x 1080 @ 60Hz	24-bit	Dual
1111	1920 x 1200 @ 60Hz	24-bit	Dual

Table 4-6: LVDS2 Panel Resolution**Figure 4-6: LVDS2 Panel Type Selection Switch Location**

4.5 Chassis Installation

4.5.1 Heat Sink Enclosure

**WARNING:**

Never run the WAFER-CV-D25501/N26001 without the heat sink secured to the board. The heat sink ensures the system remains cool and does not need addition heat sinks to cool the system.

**WARNING:**

When running the WAFER-CV-D25501/N26001, do not put the WAFER-CV-D25501/N26001 directly on a surface that can not dissipate system heat, especially the wooden or plastic desk. It is highly recommended to run the WAFER-CV-D25501/N26001

→ on a heat dissipation surface or

→ using copper pillars to hold the board up from the desk below

When the WAFER-CV-D25501/N26001 is shipped it is secured to a heat sink with five retention screws. If the WAFER-CV-D25501/N26001 must be removed from the heat sink, the five retention screws must be removed.

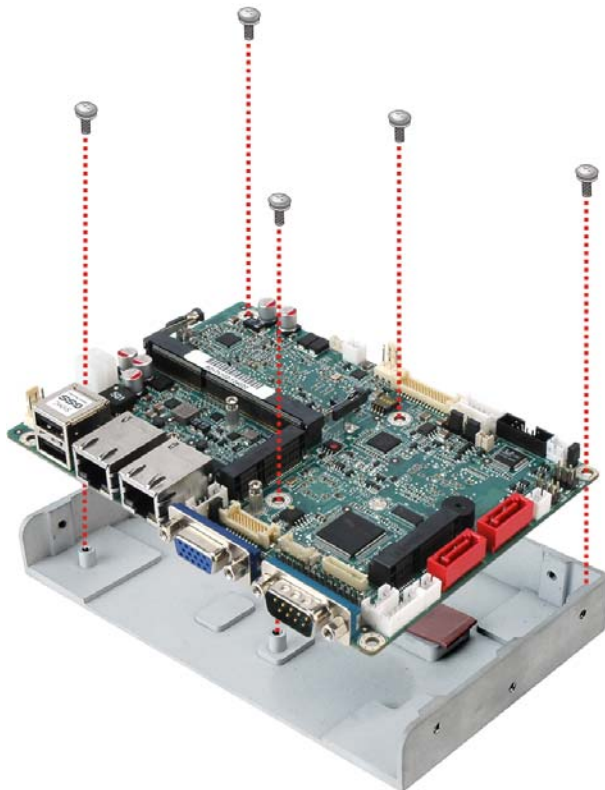


Figure 4-7: Heat Sink Retention Screws

WAFER-CV-D25501/N26001 3.5" SBC**4.5.2 Motherboard Installation**

Each side of the heat sink enclosure has several screw holes allowing the WAFER-CV-D25501/N26001 to be mounted into a chassis (please refer to **Figure 1-3** for the detailed dimensions). The user can design or select a chassis that has screw holes matching up with the holes on the heat sink enclosure for installing the WAFER-CV-D25501/N26001. The following diagram shows an example of motherboard installation.

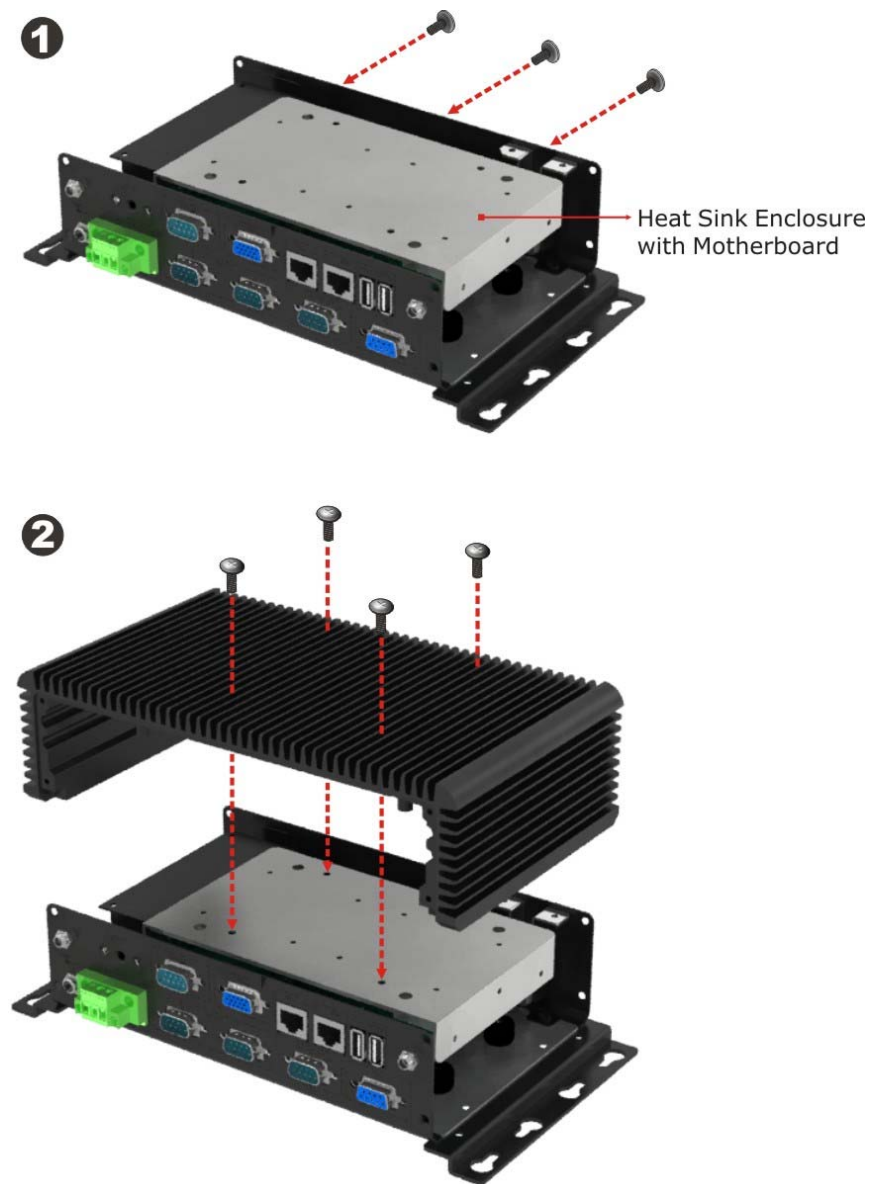


Figure 4-8: Motherboard Installation Example

4.6 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the on-board connectors.

4.6.1 Audio Kit Installation

The Audio Kit that came with the WAFER-CV-D25501/N26001 connects to the 10-pin audio connector on the WAFER-CV-D25501/N26001. The audio kit consists of three audio jacks. One audio jack, Mic In, connects to a microphone. The remaining two audio jacks, Line-In and Line-Out, connect to two speakers. To install the audio kit, please refer to the steps below:

Step 1: **Locate the audio connector.** The location of the 10-pin audio connector is shown in **Chapter 3**.

Step 2: **Align pin 1.** Align pin 1 on the on-board connector with pin 1 on the audio kit connector. Pin 1 on the audio kit connector is indicated with a white dot. See **Figure 4-9**.

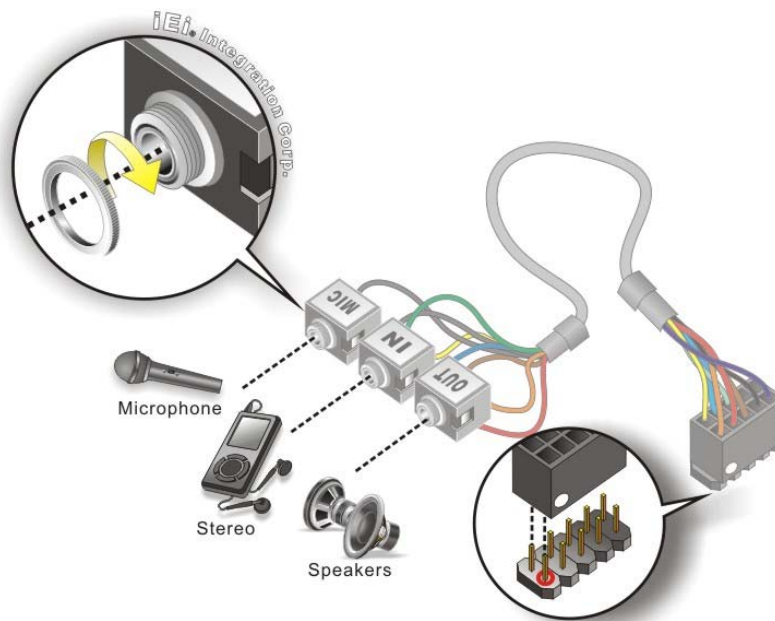


Figure 4-9: Audio Kit Cable Connection

WAFER-CV-D25501/N26001 3.5" SBC

Step 3: Connect the audio devices. Connect one speaker to the line-in audio jack, one speaker to the line-out audio jack and a microphone to the mic-in audio jack.

4.6.2 LVDS LCD Installation

The WAFER-CV-D25501/N26001 can be connected to a TFT LCD screen through the LVDS crimp connectors on the board. To connect a TFT LCD to the WAFER-CV-D25501/N26001, please follow the steps below.

Step 1: Locate the connector. The locations of the LVDS connectors are shown in Chapter 3.

Step 2: Insert the cable connector. Insert the connector from the LVDS PCB driving board to the LVDS connector as shown in **Figure 4-10**. When connecting the connectors, make sure the pins are properly aligned.



WARNING:

The diagram below is merely for illustration. The configuration and connection of the cables from the TFT LCD screen being installed may be different. Please refer to the installation manual that came with the TFT LCD screen.

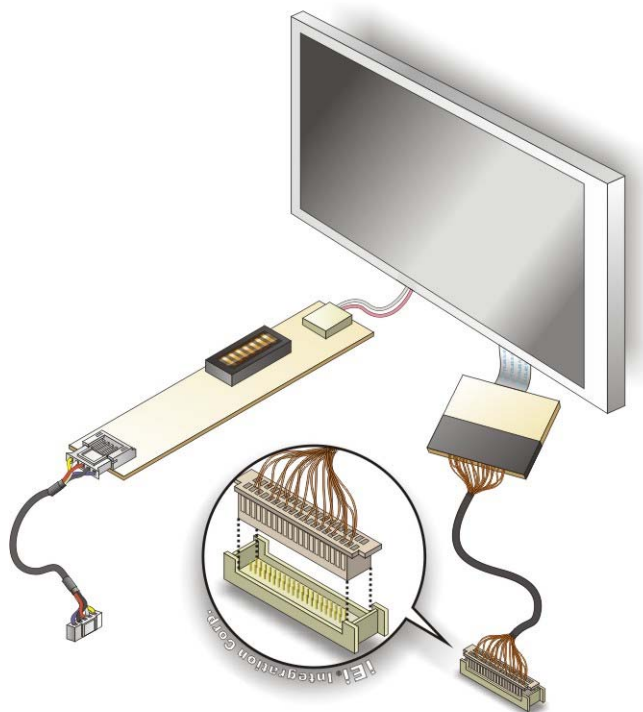


Figure 4-10: LVDS Connector

Step 3: Locate the backlight inverter connector. The locations of the backlight inverter connectors are shown in **Chapter 3**.

Step 4: Connect backlight connector. Connect the backlight connector to the driver TFT LCD PCB as shown in **Figure 4-11**. When inserting the cable connector, make sure the pins are properly aligned.

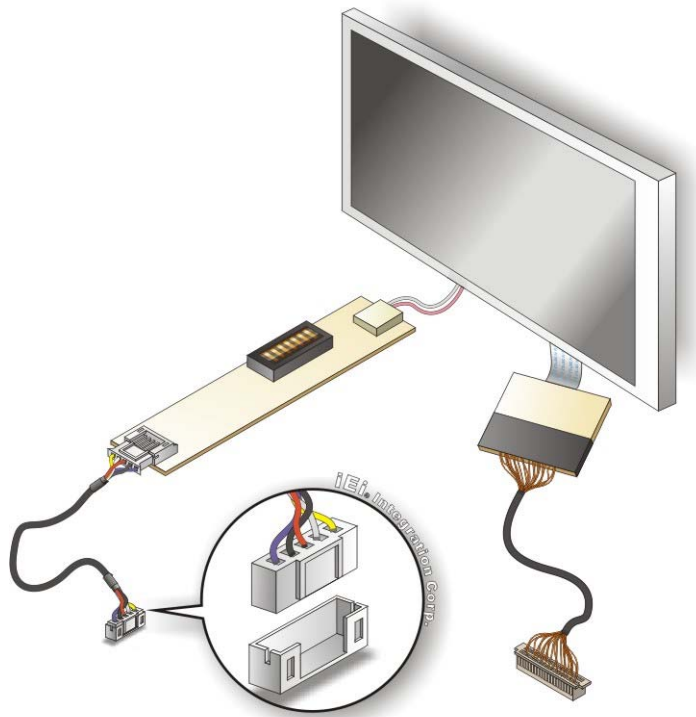


Figure 4-11: Backlight Inverter Connection

4.6.3 Full-size PCIe Mini Card Installation

To install a full-size PCIe Mini card, please follow the steps below.

- Step 1:** **Locate the full-size PCIe Mini card slot.** The location of the full-size PCIe Mini card slot is shown in **Chapter 3**.
- Step 2:** **Remove the retention screw.** Remove the retention screw secured on the motherboard as shown in **Figure 4-12**.

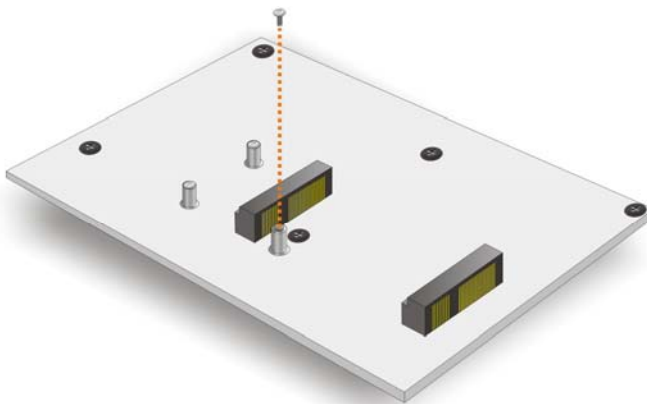


Figure 4-12: Remove the Retention Screw for the Full-size PCIe Mini Card

Step 3: Insert into the socket at an angle. Line up the notch on the card with the notch on the connector. Slide the PCIe Mini card into the socket at an angle of about 20° (Figure 4-13).

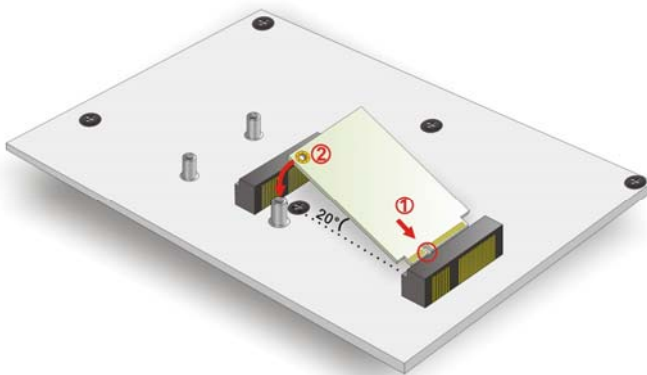


Figure 4-13: Insert the Full-size PCIe Mini Card into the Socket at an Angle

Step 4: Secure the full-size PCIe Mini card. Secure the full-size PCIe Mini card with the retention screw previously removed (Figure 4-14).

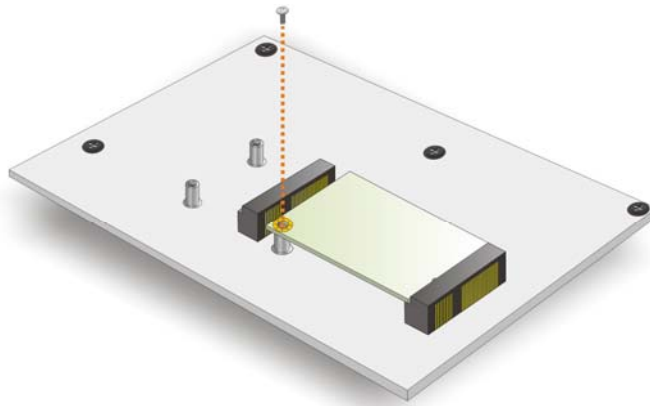


Figure 4-14: Secure the Full-size PCIe Mini Card

4.6.4 Half-size PCIe Mini Card Installation

To install a half-size PCIe Mini card, please follow the steps below.

Step 1: Locate the half-size PCIe Mini card slot. The location of the half-size PCIe Mini card slot is shown in **Chapter 3**.

Step 2: Remove the retention screws. Remove the two retention screws secured on the motherboard as shown in **Figure 4-15**.

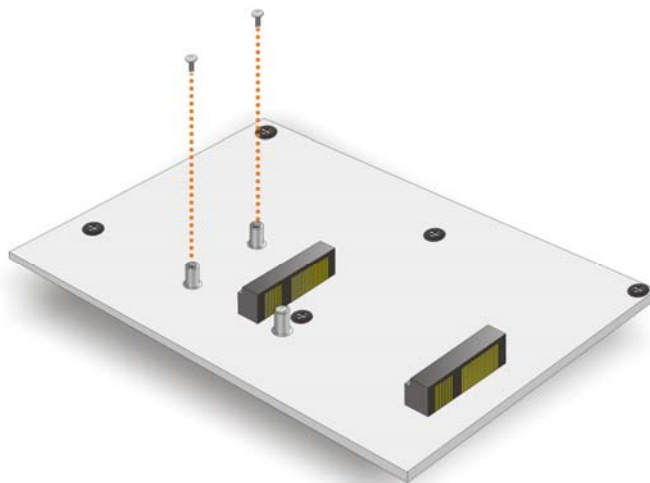


Figure 4-15: Remove the Retention Screws for the Half-size PCIe Mini Card

Step 3: Insert into the socket at an angle. Line up the notch on the card with the notch on the connector. Slide the PCIe Mini card into the socket at an angle of about 20° (Figure 4-16).

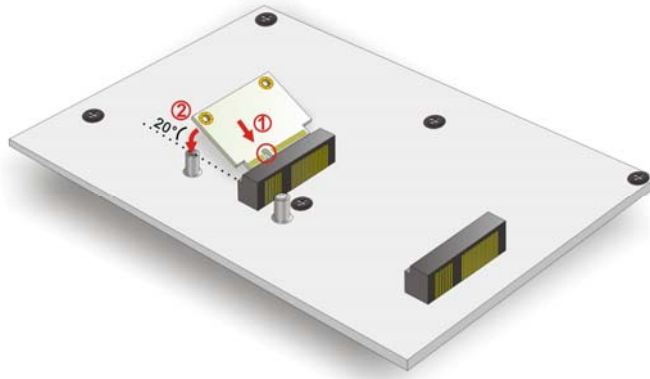


Figure 4-16: Insert the Half-size PCIe Mini Card into the Socket at an Angle

Step 4: Secure the half-size PCIe Mini card. Secure the half-size PCIe Mini card with the two retention screws previously removed (Figure 4-17).

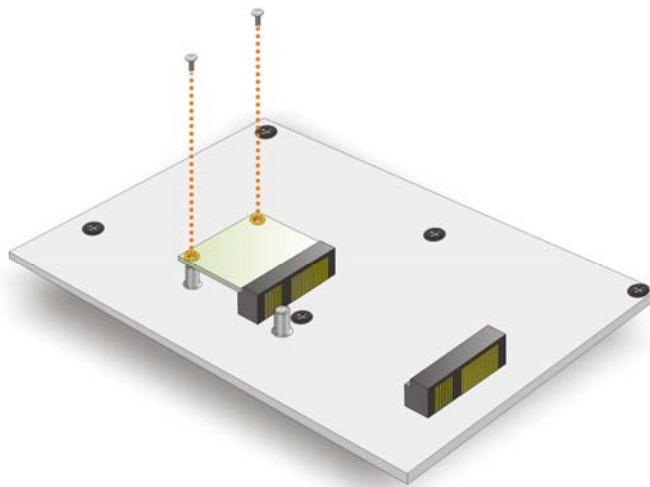


Figure 4-17: Secure the Half-size PCIe Mini Card

4.6.5 SATA Drive Connection

The WAFER-CV-D25501/N26001 is shipped with a SATA drive cable. To connect the SATA drive to the connector, please follow the steps below.

WAFER-CV-D25501/N26001 3.5" SBC

Step 1: Locate the SATA connector and the SATA power connector. The locations of the connectors are shown in **Chapter 3**.

Step 2: Insert the cable connector. Insert the cable connector into the on-board SATA drive connector and the SATA power connector. See **Figure 4-18**.

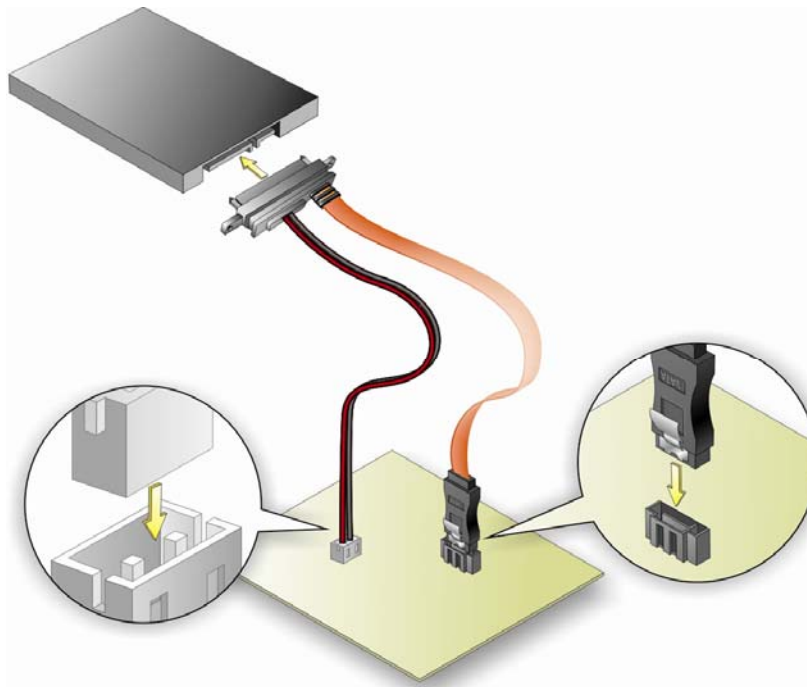


Figure 4-18: SATA Drive Cable Connection

Step 3: Connect the cable to the SATA disk. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 4-18**.

Step 4: To remove the SATA cable from the SATA connector, press the clip on the connector at the end of the cable.

4.6.6 Single RS-232 Cable

The single RS-232 cable consists of one serial port connector attached to a serial communications cable that is then attached to a D-sub 9 male connector. To install the single RS-232 cable, please follow the steps below.

Step 1: **Locate the connector.** The locations of the RS-232 connectors are shown in Chapter 3.

Step 2: **Insert the cable connector.** Insert the connector into the serial port header. See **Figure 4-19**. A key on the front of the cable connector ensures the connector can only be installed in one direction.

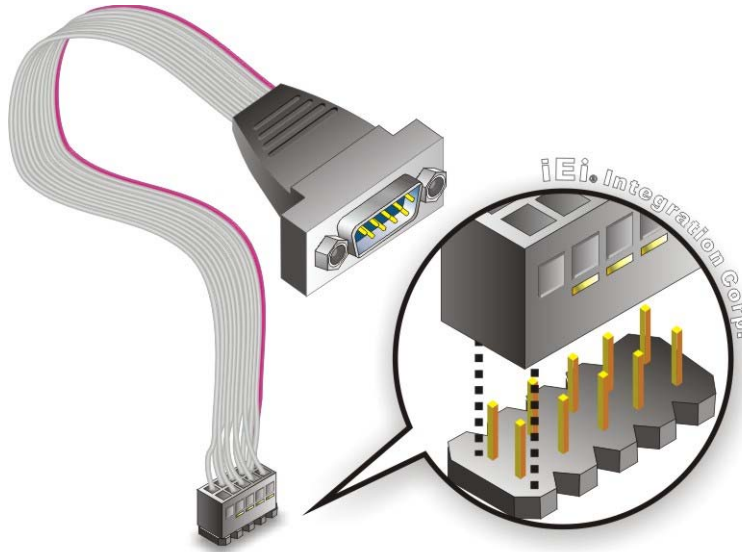


Figure 4-19: Single RS-232 Cable Installation

Step 3: **Secure the bracket.** The single RS-232 connector has two retention screws that must be secured to a chassis or bracket.

Step 4: **Connect the serial device.** Once the single RS-232 connector is connected to a chassis or bracket, a serial communications device can be connected to the system.

4.6.7 Keyboard/Mouse Y-cable Connector

The WAFER-CV-D25501/N26001 is shipped with a keyboard/mouse Y-cable connector. The keyboard/mouse Y-cable connector connects to a keyboard/mouse connector on the WAFER-CV-D25501/N26001 and branches into two cables that are each connected to a PS/2 connector, one for a mouse and one for a keyboard. To connect the keyboard/mouse Y-cable connector, please follow the steps below.

WAFER-CV-D25501/N26001 3.5" SBC

- Step 1: Locate the connector.** The location of the keyboard/mouse Y-cable connector is shown in **Chapter 3**.
- Step 2: Align the connectors.** Correctly align pin 1 on the cable connector with pin 1 on the WAFER-CV-D25501/N26001 keyboard/mouse connector. See **Figure 4-20**.
- Step 3: Insert the cable connectors** Once the cable connector is properly aligned with the keyboard/mouse connector on the WAFER-CV-D25501/N26001, connect the cable connector to the on-board connector. See **Figure 4-20**.

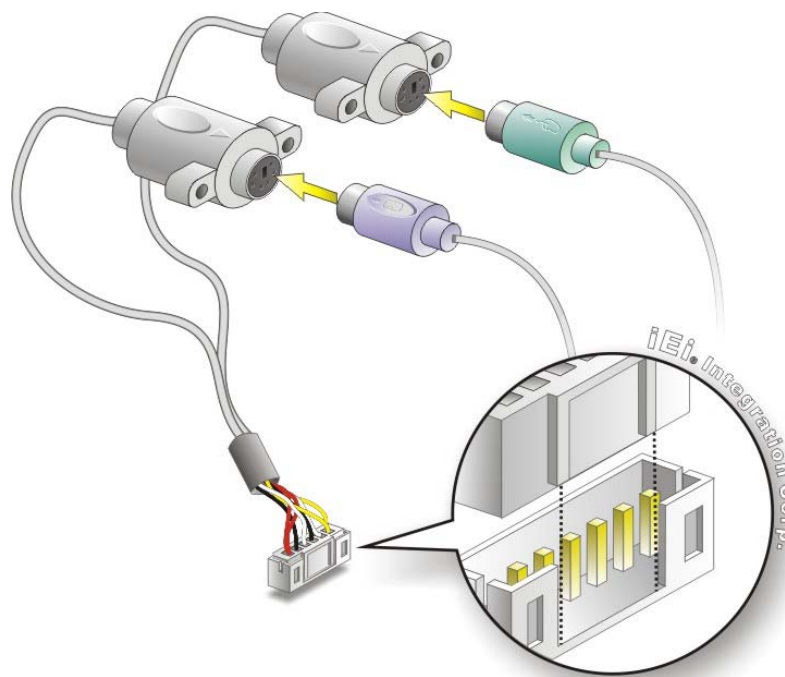


Figure 4-20: Keyboard/mouse Y-cable Connection

- Step 4: Attach PS/2 connectors to the chassis.** The keyboard/mouse Y-cable connector is connected to two PS/2 connectors. To secure the PS/2 connectors to the chassis please refer to the installation instructions that came with the chassis.
- Step 5: Connect the keyboard and mouse.** Once the PS/2 connectors are connected to the chassis, a keyboard and mouse can each be connected to one of the PS/2 connectors. The keyboard PS/2 connector and mouse PS/2 connector are

both marked. Please make sure the keyboard and mouse are connected to the correct PS/2 connector.

Chapter

5

BIOS

5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.



NOTE:

Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

5.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DEL** or **F2** key as soon as the system is turned on or
2. Press the **DEL** or **F2** key when the "**Press DEL or F2 to enter SETUP**" message appears on the screen.

If the message disappears before the **DEL** or **F2** key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in the following table.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes

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Key	Function
Page Up key	Move to the next page
Page Dn key	Move to the previous page
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Load previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

5.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration are made, CMOS defaults. Use the jumper described in Chapter 4.

5.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Save & Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Main	Advanced	Chipset Boot Security Save & Exit
BIOS Information		Set the Date. Use Tab to switch between Data elements.
BIOS Vendor	American Megatrends	
Core Version	4.6.5.3 0.16	
Compliance	UEFI 2.3; PI 1.2	
Project Version	B217AR10.ROM	
Build Date and Time	03/14/2012 11:53:40	-----
System Date	[Fri 04/13/2012]	→←: Select Screen
System Time	[15:10:27]	↑ ↓: Select Item
Access Level	Administrator	Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

BIOS Menu 1: Main

→ System Overview

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Project Version:** the board version
- **Build Date and Time:** Date and time the current BIOS version was made

The System Overview field also has two user configurable fields:

→ System Date [xx/xx/xx]

Use the **System Date** option to set the system date. Manually enter the day, month and year.

WAFER-CV-D25501/N26001 3.5" SBC**→ System Time [xx:xx:xx]**

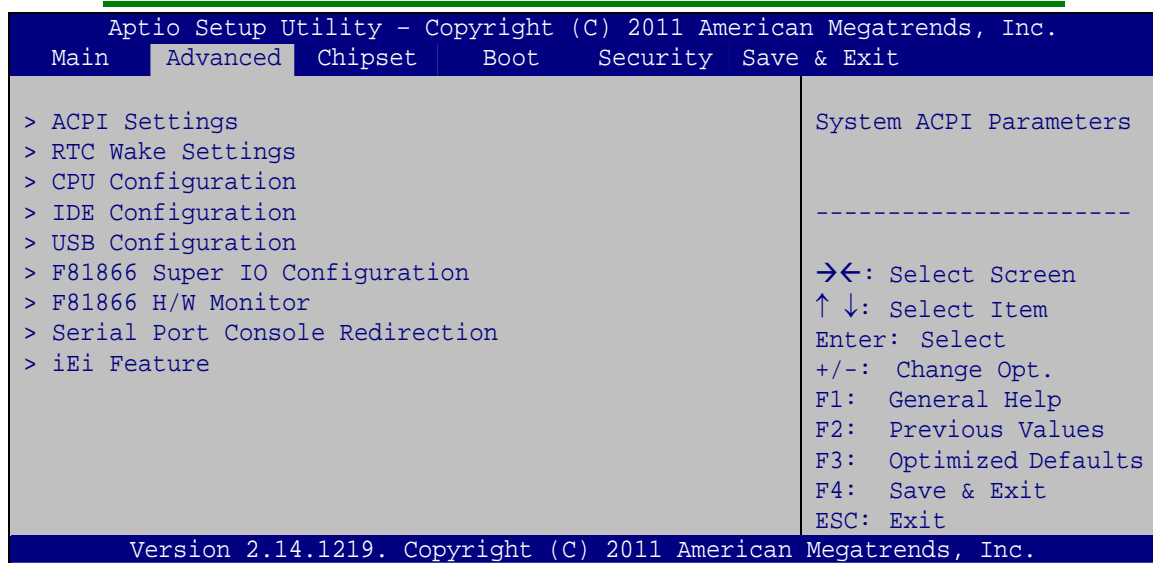
Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

5.3 Advanced

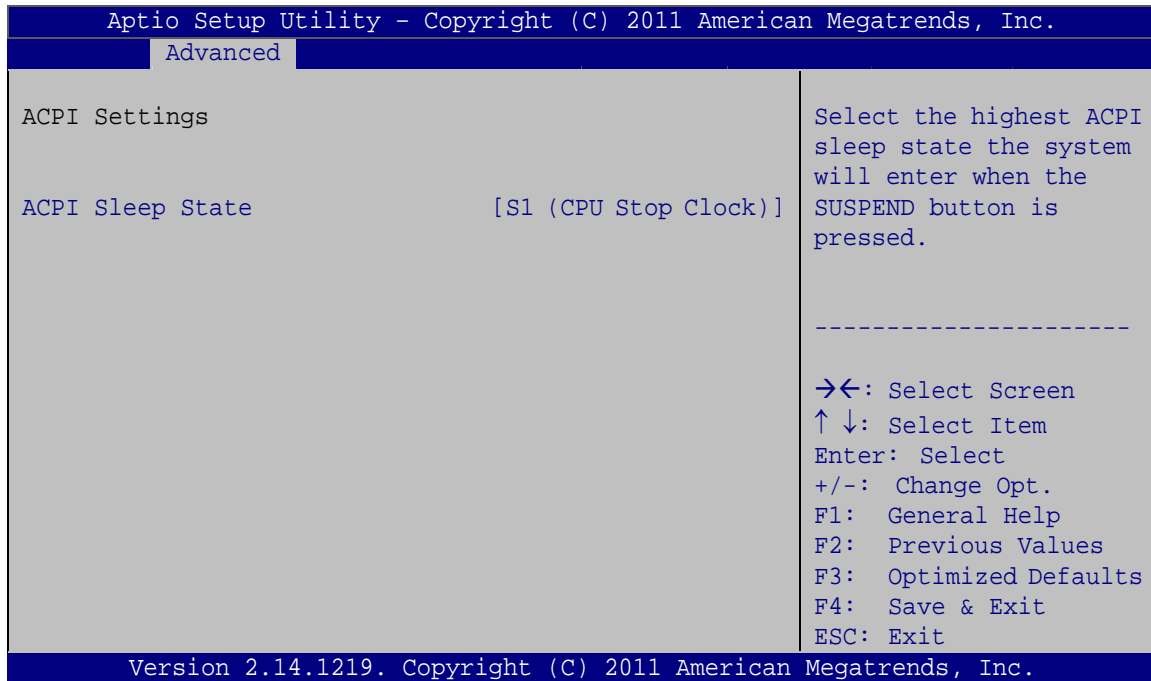
Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

**WARNING:**

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

**BIOS Menu 2: Advanced****5.3.1 ACPI Settings**

The **ACPI Settings** menu (**BIOS Menu 3**) configures the Advanced Configuration and Power Interface (ACPI) options.



BIOS Menu 3: ACPI Settings

→ ACPI Sleep State [S1 (CPU Stop Clock)]

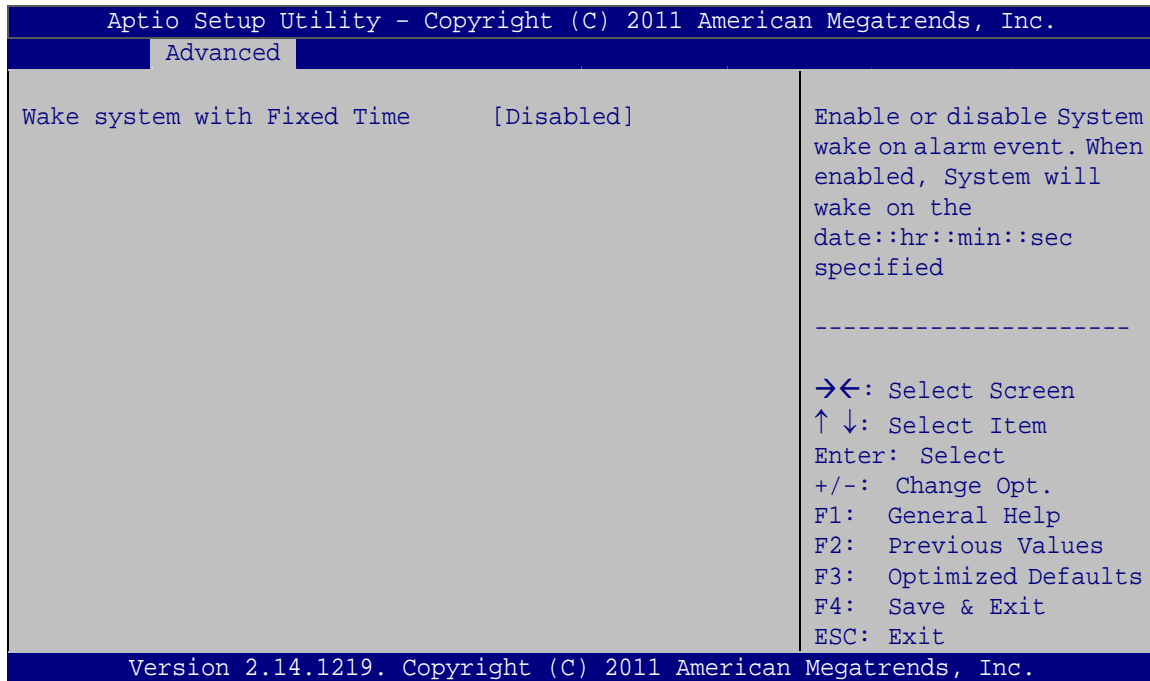
Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

- **S1 (CPU Stop DEFAULT Clock)** The system enters S1 (POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.
- **S3 (Suspend to RAM)** The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

5.3.2 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 4**) enables the system to wake at the specified time.

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BIOS Menu 4: RTC Wake Settings

→ Wake system with Fixed Time [Disabled]

Use the **Wake system with Fixed Time** option to enable or disable the system wake on alarm event.

→ **Disabled** **DEFAULT** The real time clock (RTC) cannot generate a wake event

→ **Enabled** If selected, the **Wake up every day** option appears allowing you to enable to disable the system to wake every day at the specified time. Besides, the following options appear with values that can be selected:

Wake up date

Wake up hour

Wake up minute

Wake up second

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

5.3.3 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 5**) to view detailed CPU specifications and configure the CPU.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
CPU Configuration		Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
Processor Type	Intel(R) Atom(TM) CPU D2700 @ 2.13GHz	
EMT64	Not Supported	
Processor Speed	2132 MHz	
System Bus Speed	533 MHz	
Ratio Status	16	
Actual Ratio	16	
System Bus Speed	533 MHz	
Processor Stepping	30661	
Microcode Revision	268	
L1 Cache RAM	2x56 k	
L2 Cache RAM	2x512 k	
Processor Core	Dual	
Hyper-Threading	Supported	
Hyper-Threading	[Enabled]	
		→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

BIOS Menu 5: CPU Configuration

The CPU Configuration menu (**BIOS Menu 5**) lists the following CPU details:

- **Processor Type:** Lists the brand name of the CPU being used.
- **EMT64:** Indicates if EMT64 is supported by the CPU.
- **Processor Speed:** Lists the CPU processing speed.
- **System Bus Speed:** Lists the system bus speed.
- **Ratio Status:** Lists the ratio status.
- **Actual Ratio:** Lists the ratio of the frequency to the clock speed.
- **Processor Stepping:** Lists the CPU ID.
- **Microcode Revision:** Lists the microcode revision.
- **L1 Cache RAM:** Lists the CPU L1 cache size.
- **L2 Cache RAM:** Lists the CPU L2 cache size.
- **Processor Core:** Lists the number of the processor core.
- **Hyper-Threading:** Indicates if Intel HT Technology is supported by the CPU.

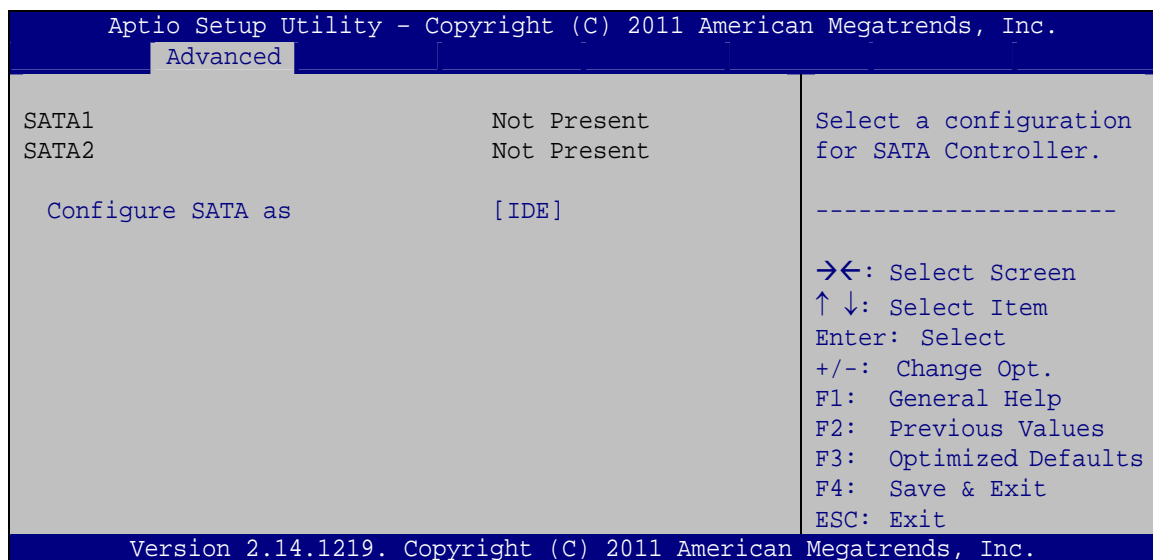
WAFER-CV-D25501/N26001 3.5" SBC**→ Hyper-Threading [Enabled]**

Use the **Hyper-Threading** BIOS option to enable or disable the Intel Hyper-Threading Technology.

- Disabled** Disables the Intel Hyper-Threading Technology.
- Enabled** **DEFAULT** Enables the Intel Hyper-Threading Technology.

5.3.4 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 6**) to change and/or set the configuration of the SATA devices installed in the system.

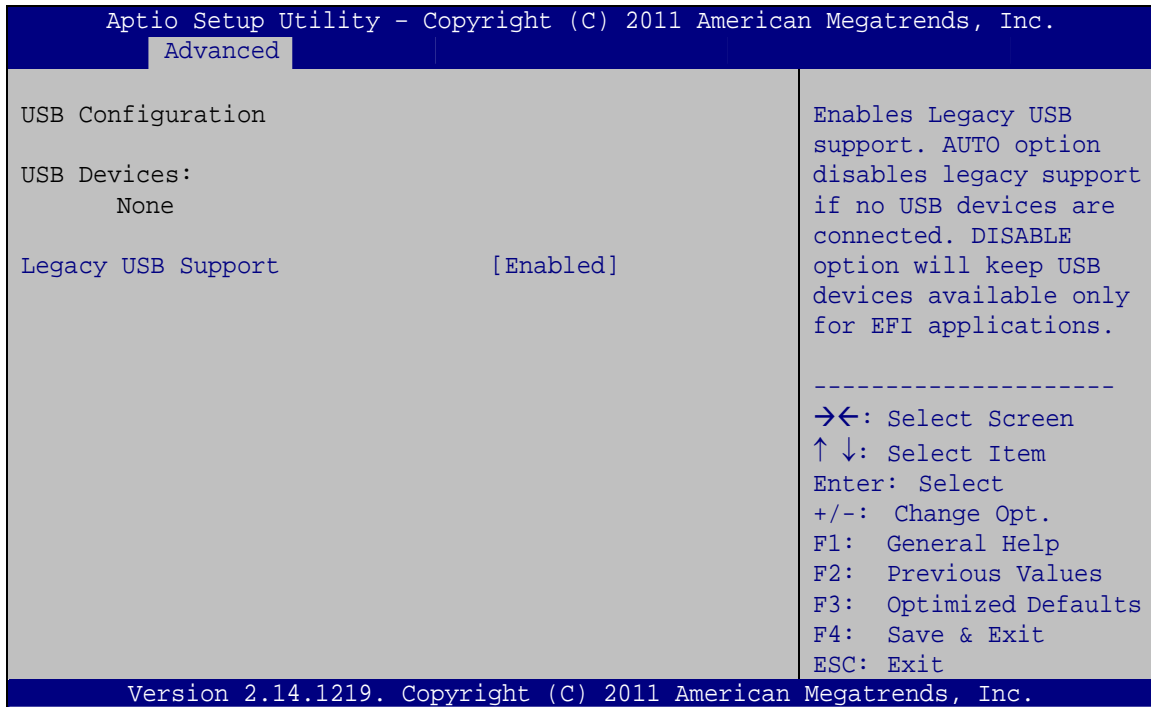
**BIOS Menu 6: IDE Configuration****→ Configure SATA as [IDE]**

Use the **Configure SATA as** option to configure SATA devices as normal IDE or AHCI devices.

- IDE** **DEFAULT** Configures SATA devices as normal IDE device.
- AHCI** Configures SATA devices as AHCI device.

5.3.5 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 7**) to read USB configuration information and configure the USB settings.



BIOS Menu 7: USB Configuration

➔ Legacy USB Support [Enabled]

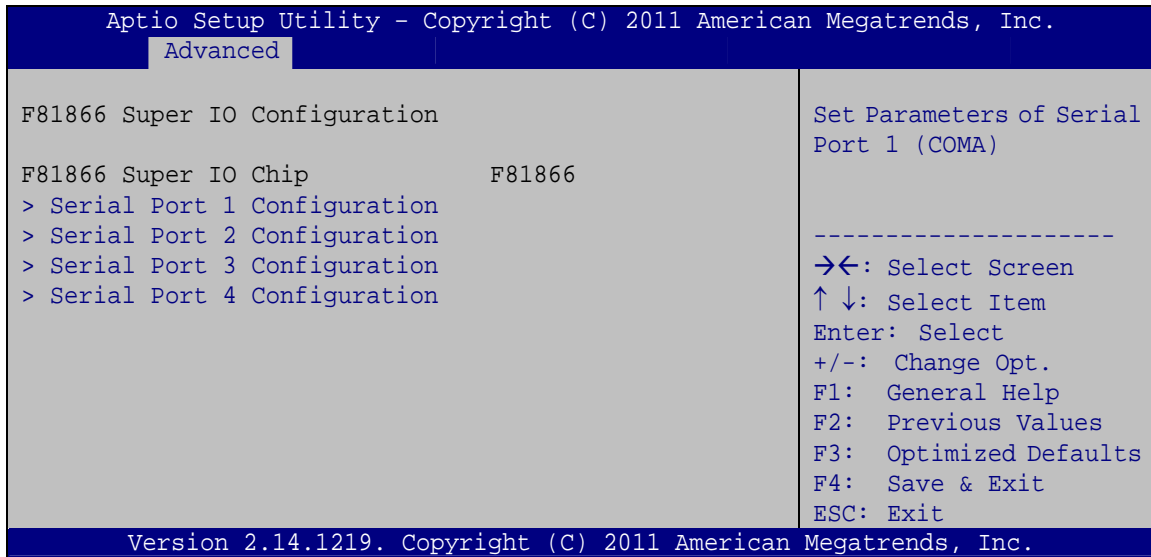
Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

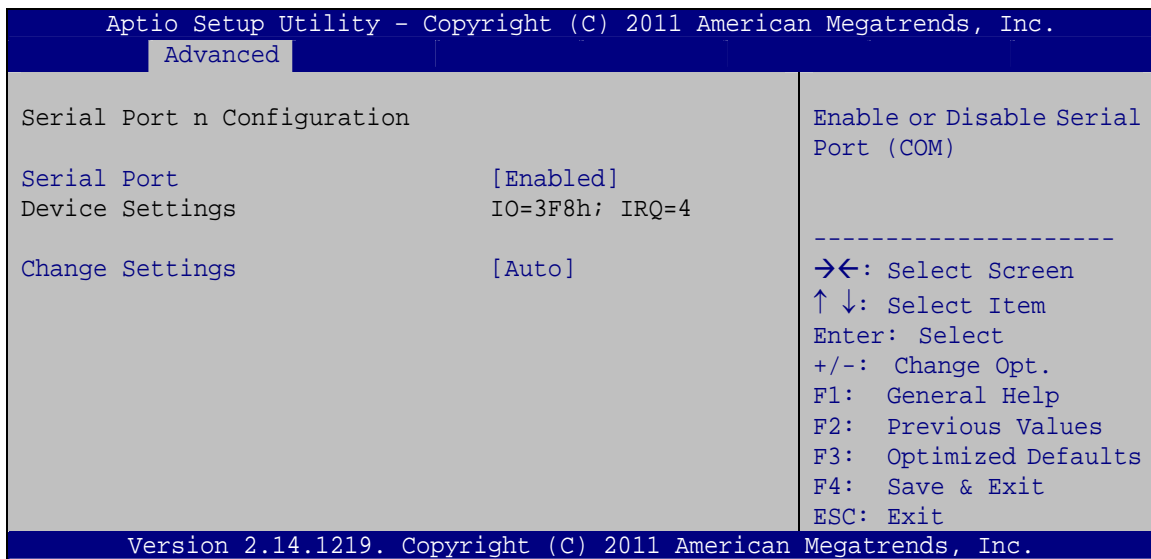
- | | | | |
|---|-----------------|----------------|-------------------------------------------------------------|
| ➔ | Disabled | | Legacy USB support disabled |
| ➔ | Enabled | DEFAULT | Legacy USB support enabled |
| ➔ | Auto | | Legacy USB support disabled if no USB devices are connected |

WAFER-CV-D25501/N26001 3.5" SBC**5.3.6 F81866 Super IO Configuration**

Use the **F81866 Super IO Configuration** menu (**BIOS Menu 8**) to set or change the configurations for the serial ports.

**BIOS Menu 8: Super IO Configuration****5.3.6.1 Serial Port n Configuration**

Use the **Serial Port n Configuration** menu (**BIOS Menu 9**) to configure the serial port n.

**BIOS Menu 9: Serial Port n Configuration Menu**



5.3.6.1.1 Serial Port 1 Configuration

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- ➔ Disabled Disable the serial port
- ➔ Enabled **DEFAULT** Enable the serial port

➔ Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- ➔ Auto **DEFAULT** The serial port IO port address and interrupt address are automatically detected.
- ➔ IO=3F8h;
 IRQ=4 Serial Port I/O port address is 3F8h and the interrupt address is IRQ4
- ➔ IO=3F8h;
 IRQ=3, 4 Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
- ➔ IO=2F8h;
 IRQ=3, 4 Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
- ➔ IO=3E8h;
 IRQ=3, 4 Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4
- ➔ IO=2E8h;
 IRQ=3, 4 Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4

5.3.6.1.2 Serial Port 2 Configuration

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- ➔ Disabled Disable the serial port
- ➔ Enabled **DEFAULT** Enable the serial port



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→ Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

→	Auto	DEFAULT	The serial port IO port address and interrupt address are automatically detected.
→	IO=2F8h; IRQ=3		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3
→	IO=3F8h; IRQ=3, 4		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
→	IO=2F8h; IRQ=3, 4		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
→	IO=3E8h; IRQ=3, 4		Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4
→	IO=2E8h; IRQ=3, 4		Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4

5.3.6.1.3 Serial Port 3 Configuration

→ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

→	Disabled		Disable the serial port
→	Enabled	DEFAULT	Enable the serial port

→ Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

→	Auto	DEFAULT	The serial port IO port address and interrupt address are automatically detected.
---	-------------	----------------	-----------------------------------------------------------------------------------

- | | | |
|---|------------------------|-----------------------------------------------------------------------------|
| ➔ | IO=3E8h;
IRQ=10 | Serial Port I/O port address is 3E8h and the interrupt address is IRQ10 |
| ➔ | IO=3F8h;
IRQ=10, 11 | Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11 |
| ➔ | IO=2F8h;
IRQ=10, 11 | Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11 |
| ➔ | IO=3E8h;
IRQ=10, 11 | Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11 |
| ➔ | IO=2E8h;
IRQ=10, 11 | Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11 |
| ➔ | IO=250h;
IRQ=10, 11 | Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11 |
| ➔ | IO=2E0h;
IRQ=10, 11 | Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11 |

5.3.6.1.4 Serial Port 4 Configuration

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- | | | |
|---|------------------------|-------------------------|
| ➔ | Disabled | Disable the serial port |
| ➔ | Enabled DEFAULT | Enable the serial port |

➔ Change Settings [Auto]

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

- | | | |
|---|---------------------|-----------------------------------------------------------------------------------|
| ➔ | Auto DEFAULT | The serial port IO port address and interrupt address are automatically detected. |
| ➔ | IO=2E8h;
IRQ=10 | Serial Port I/O port address is 2E8h and the interrupt address is IRQ10 |

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➔ IO=3F8h; IRQ=10, 11	Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11
➔ IO=2F8h; IRQ=10, 11	Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11
➔ IO=3E8h; IRQ=10, 11	Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11
➔ IO=2E8h; IRQ=10, 11	Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
➔ IO=250h; IRQ=10, 11	Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11
➔ IO=2E0h; IRQ=10, 11	Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11

5.3.7 F81866 H/W Monitor

The **F81866 H/W Monitor** menu (**BIOS Menu 10**) contains the fan configuration submenus and displays operating temperature, fan speeds and system voltages.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
PC Health Status	Smart Fan Mode Select
> Smart Fan Mode Configuration	
CPU Temperature	: +52 C
System Temperature	: +51 C
CPU_FAN1 Speed	: N/A
SYS_FAN1 Speed	: N/A
+VCC_CPU	: +1.488 V
+VCC_GFX	: +0.968 V
+V1.05S	: +1.056 V
+V1.5_DDR3	: +1.504 V
VSB5V	: +5.040 V
+V3.3S	: +3.344 V
VSB3V	: +3.344 V
VBAT	: +3.264 V
----- ➔⬅: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.	

BIOS Menu 10: F81866 H/W Monitor

→ PC Health Status

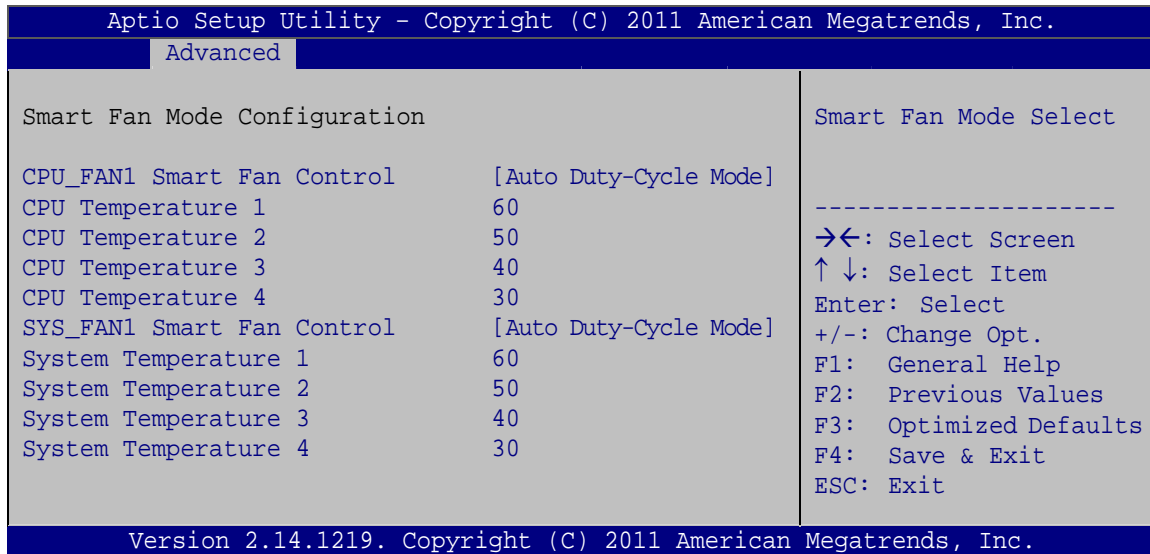
The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
 - CPU Temperature
 - System Temperature
- Fan Speeds:
 - CPU Fan Speed
 - System Fan Speed
- Voltages:
 - +VCC_CPU
 - +VCC_GFX
 - +V1.05S
 - +1.5_DDR3
 - VSB5V
 - +V3.3S
 - VSB3V
 - VBAT

5.3.7.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 11**) to configure fan temperature and speed settings.

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BIOS Menu 11: Smart Fan Mode Configuration

→ CPU_FAN1/SYS_FAN Smart Fan Control [Auto Duty-Cycle Mode]

Use the **CPU_FAN1** or **SYS_FAN1 Smart Fan Control** option to configure the CPU or System Smart Fan.

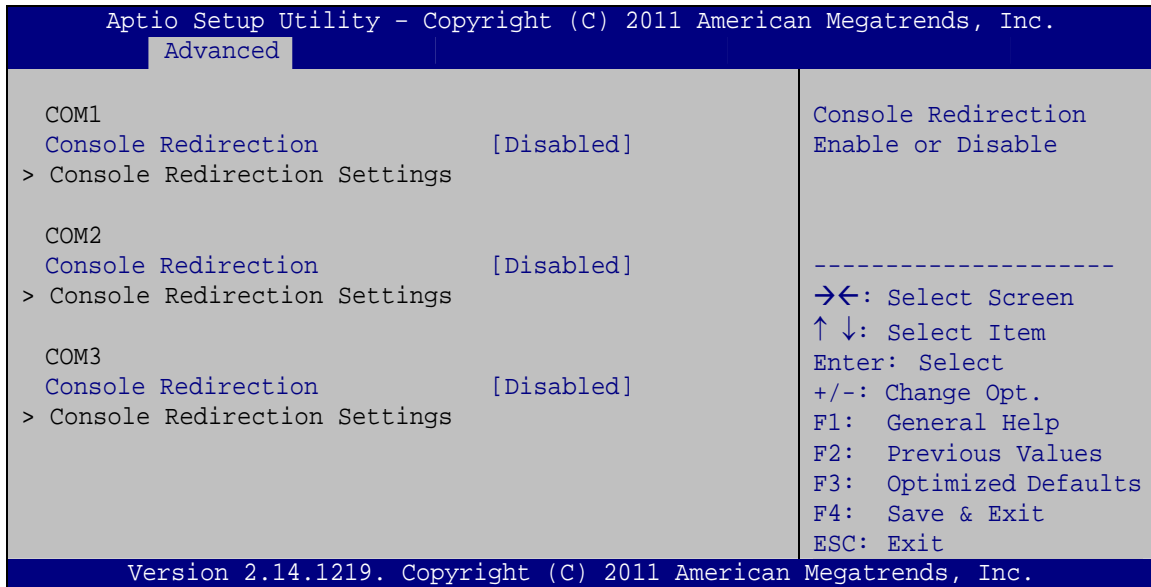
- **Auto** **DEFAULT** The fan adjusts its speed using Auto Duty-Cycle settings
- **Manual Duty Mode** The fan spins at the speed set in Manual Duty Mode settings

→ CPU/System Temperature n

Use the + or – key to change the fan **CPU** or **System Temperature n** value. Enter a decimal number between 1 and 100.

5.3.8 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 12**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



BIOS Menu 12: Serial Port Console Redirection

→ Console Redirection [Disabled]

Use **Console Redirection** option to enable or disable the console redirection function.

- **Disabled** **DEFAULT** Disabled the console redirection function
- **Enabled** Enabled the console redirection function

→ Terminal Type [ANSI]

Use the **Terminal Type** option to specify the remote terminal type.

- **VT100** The target terminal type is VT100
- **VT100+** The target terminal type is VT100+
- **VT-UTF8** The target terminal type is VT-UTF8
- **ANSI** **DEFAULT** The target terminal type is ANSI

→ Bits per second [115200]

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match the other side. Long or noisy lines may require lower speeds.

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- ➔ **9600** Sets the serial port transmission speed at 9600.
- ➔ **19200** Sets the serial port transmission speed at 19200.
- ➔ **38400** Sets the serial port transmission speed at 38400.
- ➔ **57600** Sets the serial port transmission speed at 57600.
- ➔ **115200** **DEFAULT** Sets the serial port transmission speed at 115200.

➔ Data Bits [8]

Use the **Data Bits** option to specify the number of data bits.

- ➔ **7** Sets the data bits at 7.
- ➔ **8** **DEFAULT** Sets the data bits at 8.

➔ Parity [None]

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

- ➔ **None** **DEFAULT** No parity bit is sent with the data bits.
- ➔ **Even** The parity bit is 0 if the number of ones in the data bits is even.
- ➔ **Odd** The parity bit is 0 if the number of ones in the data bits is odd.
- ➔ **Mark** The parity bit is always 1. This option does not provide error detection.
- ➔ **Space** The parity bit is always 0. This option does not provide error detection.

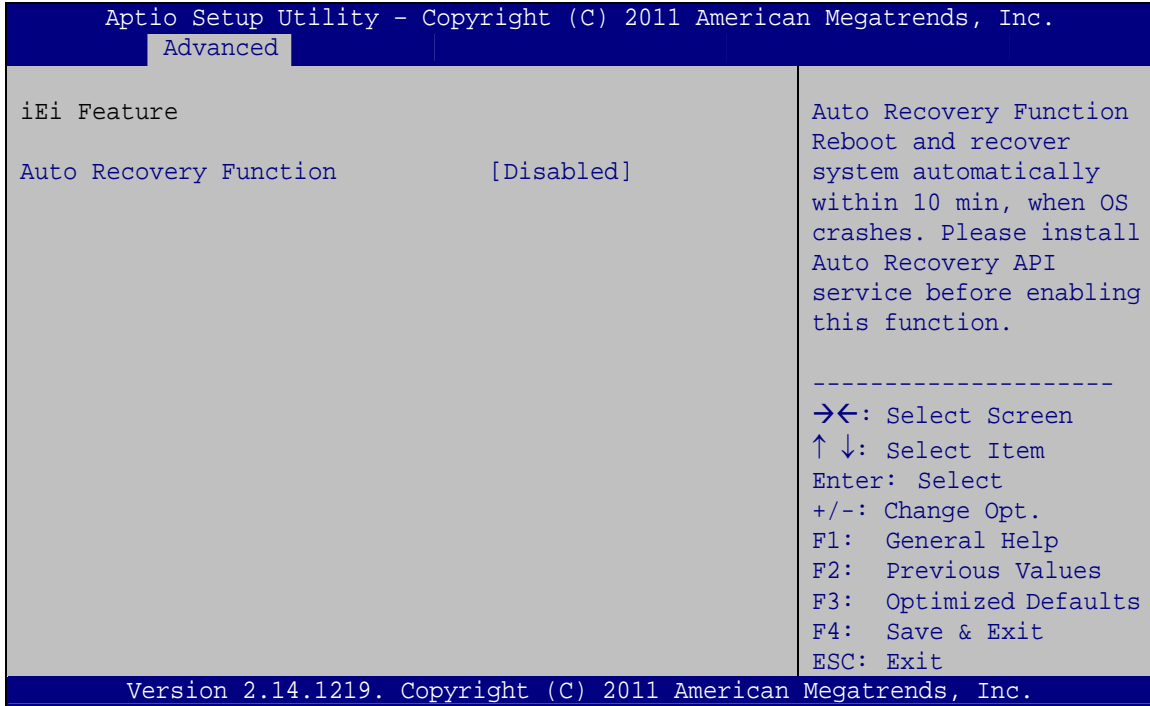
➔ Stop Bits [1]

Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

- ➔ 1 **DEFAULT** Sets the number of stop bits at 1.
- ➔ 2 Sets the number of stop bits at 2.

5.3.9 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 13**) to configure One Key Recovery function.



BIOS Menu 13: IEI Feature

➔ Auto Recovery Function [Disabled]

Use the **Auto Recovery Function** BIOS option to enable or disable the auto recovery function of the IEI One Key Recovery.

- ➔ **Disabled** **DEFAULT** Auto recovery function disabled
- ➔ **Enabled** Auto recovery function enabled

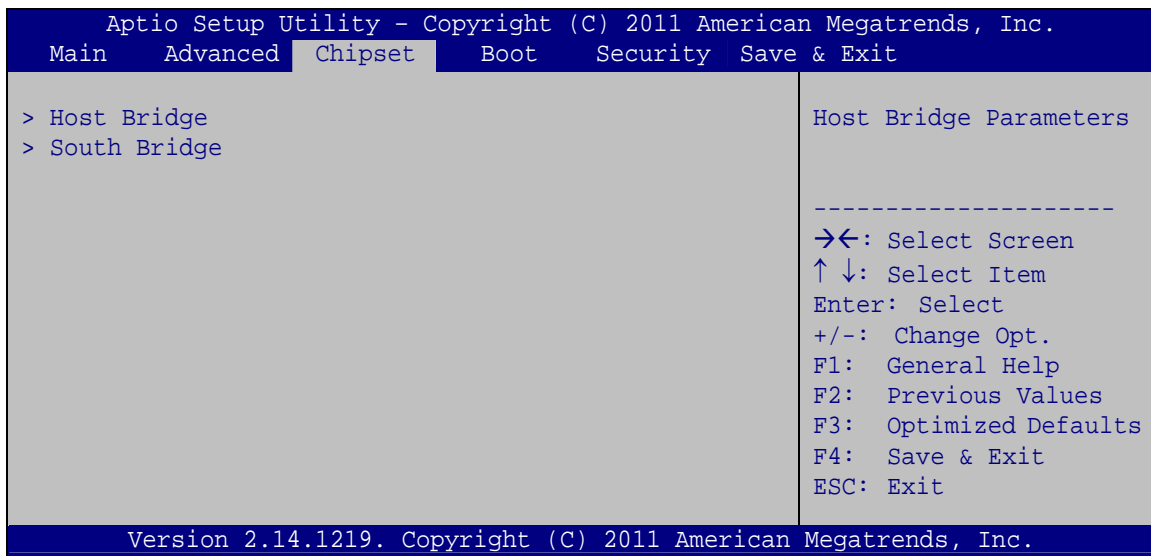
WAFER-CV-D25501/N26001 3.5" SBC

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 14**) to access the Host Bridge and Southbridge configuration menus.

**WARNING!**

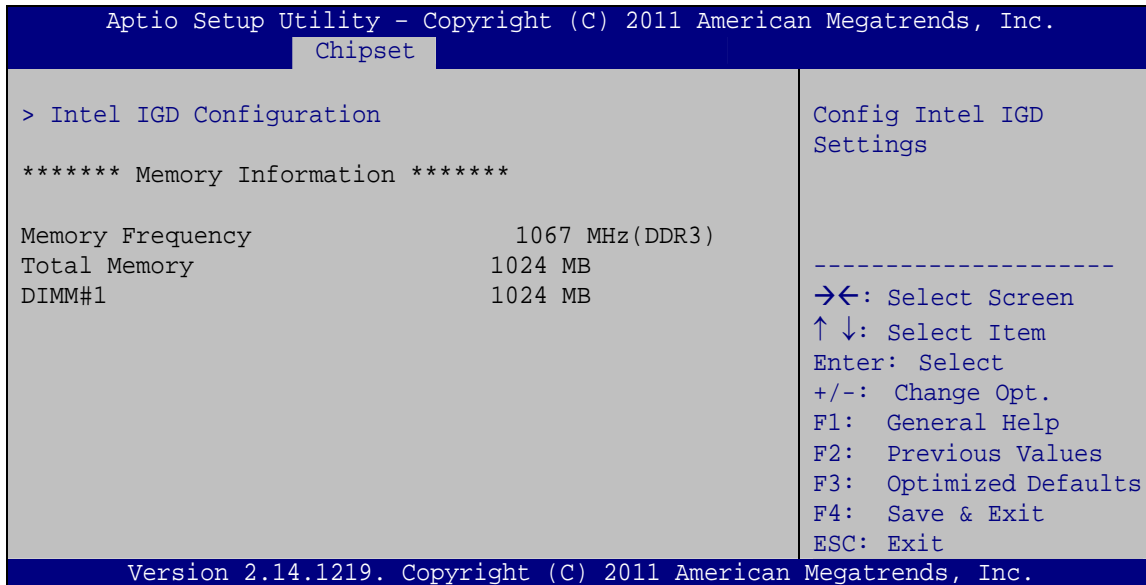
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 14: Chipset

5.4.1 Host Bridge Configuration

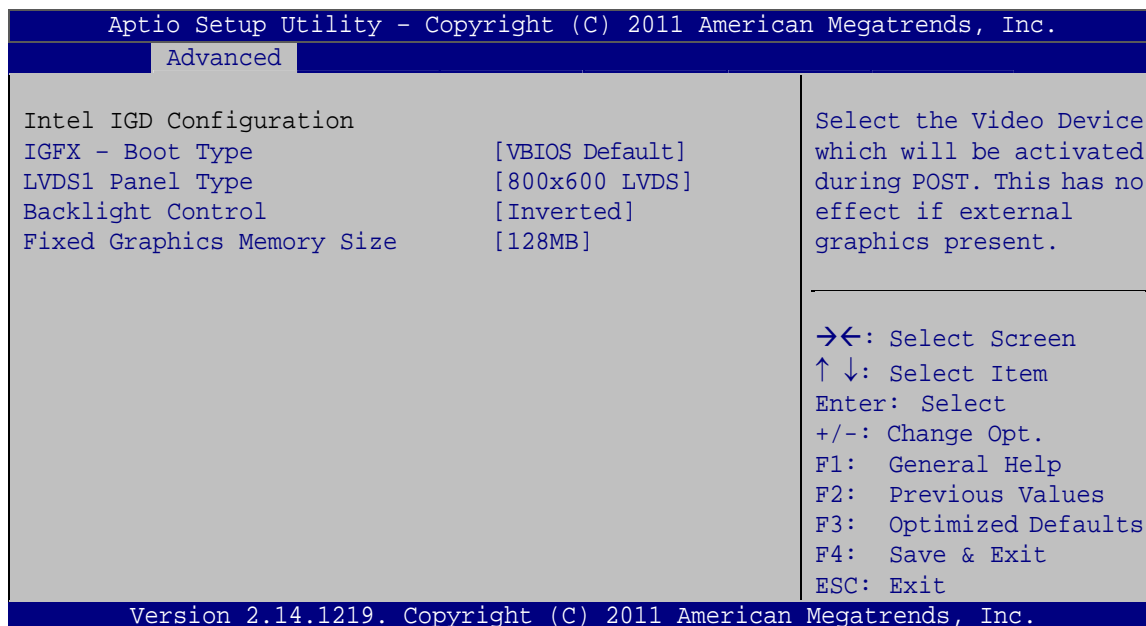
Use the **Host Bridge Configuration** menu (**BIOS Menu 15**) to configure the Intel IGD Configuration and display the memory information.



BIOS Menu 15: Host Bridge Configuration

5.4.1.1 Intel IGD Configuration

Use the **Intel IGD Configuration** submenu (**BIOS Menu 16**) to configure the video device connected to the system.



BIOS Menu 16: Intel IGD Configuration

WAFER-CV-D25501/N26001 3.5" SBC**→ IGFX - Boot Type [VBIOS Default]**

Use the **IGFX - Boot Type** option to select the display device used by the system when it boots. Configuration options are listed below.

- VBIOS Default **DEFAULT**
- CRT
- LVDS1
- LVDS2

→ LVDS1 Panel Type [800x600 LVDS]

Use the **LVDS1 Panel Type** option to select the type of flat panel connected to the system. Configuration options are listed below.

- 640x480 LVDS
- 800x600 LVDS **DEFAULT**
- 1024x768 LVDS
- 1280x1024 LVDS
- 1366x768 LVDS
- 1224x600 LVDS
- 1280x800 LVDS

→ Backlight Control [Inverted]

Use the **Backlight Control** option to select the backlight control mode.

- Normal** Brightest at high voltage level
- Inverted** **DEFAULT** Brightest at low voltage level

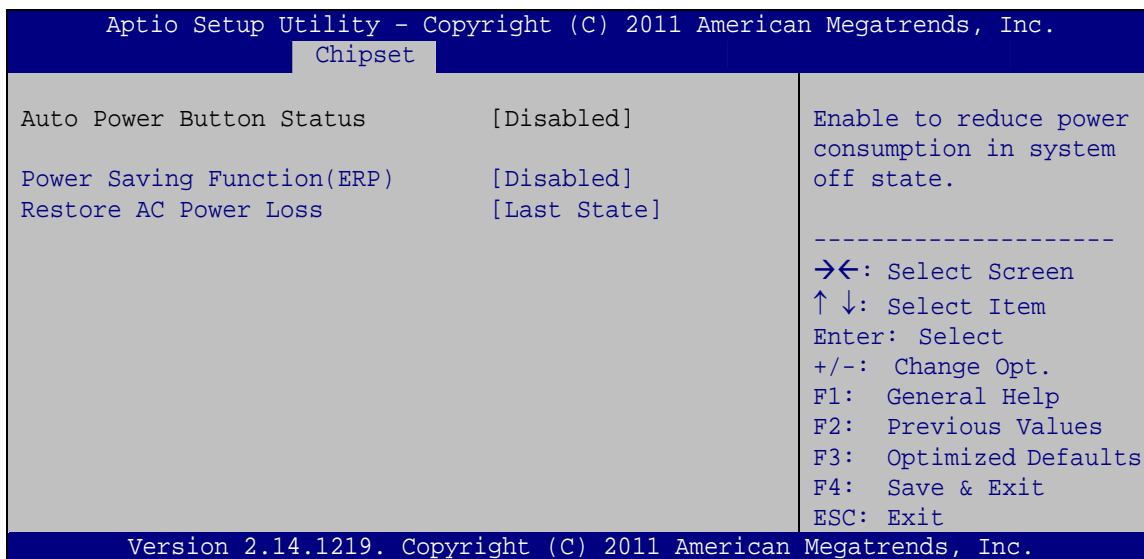
→ Fixed Graphics Memory Size [128MB]

Use the **Fixed Graphics Memory Size** option to specify the maximum amount of memory that can be allocated as graphics memory. Configuration options are listed below.

- 128MB **DEFAULT**
- 256MB

5.4.2 South Bridge Configuration

Use the **South Bridge Configuration** menu (**BIOS Menu 17**) to configure the Southbridge chipset.



BIOS Menu 17: Southbridge Chipset Configuration

→ Power Saving Function(ERP) [Disabled]

Use the **Power Saving Function(ERP)** option to enable or disable the power saving function.

- **Disabled** **DEFAULT** Disables the power saving function.
- **Enabled** Enables the power saving function.

→ Restore AC Power Loss [Last State]

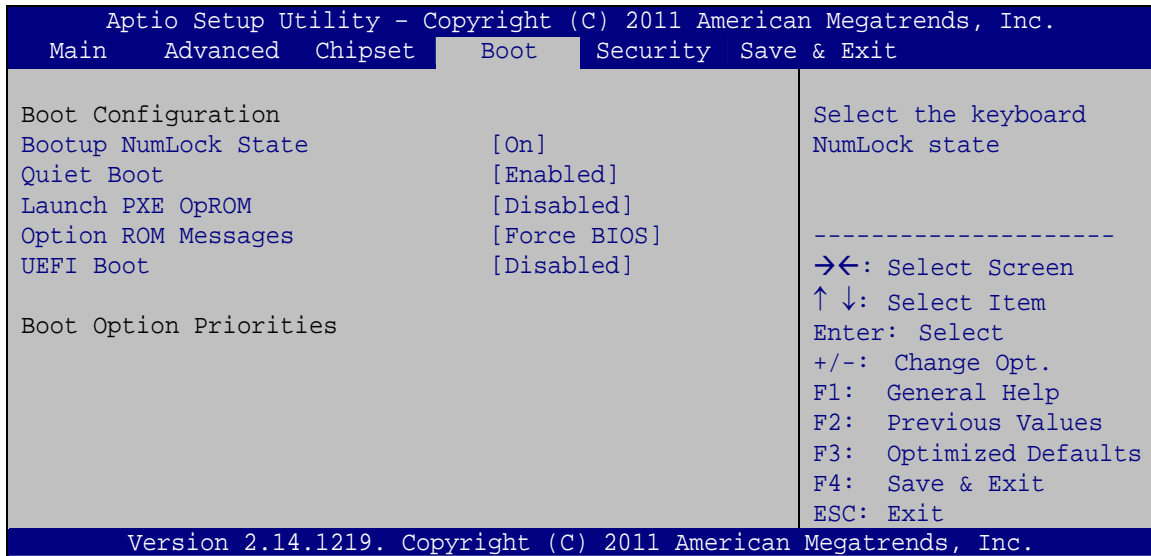
Use the **Restore AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

- **Power Off** The system remains turned off
- **Power On** The system turns on
- **Last State** **DEFAULT** The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

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5.5 Boot

Use the **Boot menu (BIOS Menu 18)** to configure system boot options.



BIOS Menu 18: Boot

→ Bootup NumLock State [On]

Use the **Bootup NumLock State** BIOS option to specify if the number lock setting must be modified during boot up.

→ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

→ **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

→ Quiet Boot [Enabled]

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

- **Disabled** Normal POST messages displayed
- **Enabled** **DEFAULT** OEM Logo displayed instead of POST messages

→ Launch PXE OpROM [Disabled]

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

- **Disabled** **DEFAULT** Ignore all PXE Option ROMs
- **Enabled** Load PXE Option ROMs.

→ Option ROM Messages [Force BIOS]

Use the **Option ROM Messages** option to set the Option ROM display mode.

- **Force BIOS** **DEFAULT** Sets display mode to force BIOS.
- **Keep Current** Sets display mode to current.

→ UEFI Boot [Disabled]

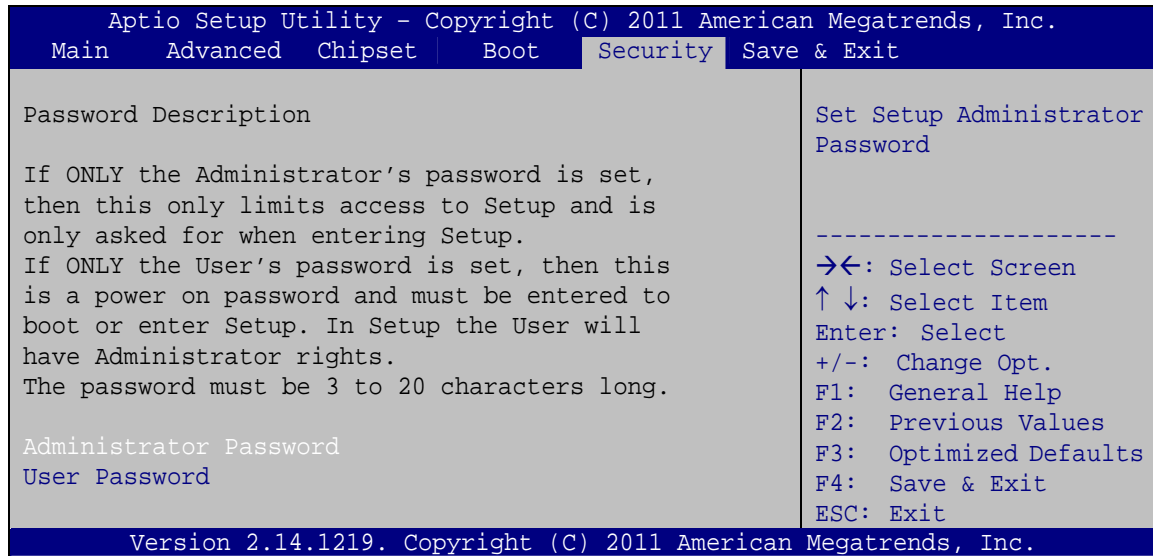
Use the **UEFI Boot** BIOS option to allow the system to boot from the UEFI devices.

- **Disabled** **DEFAULT** Disables to boot from the UEFI devices.
- **Enabled** Enables to boot from the UEFI devices.

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5.6 Security

Use the **Security** menu (**BIOS Menu 19**) to set system and user passwords.



BIOS Menu 19: Security

→ Administrator Password

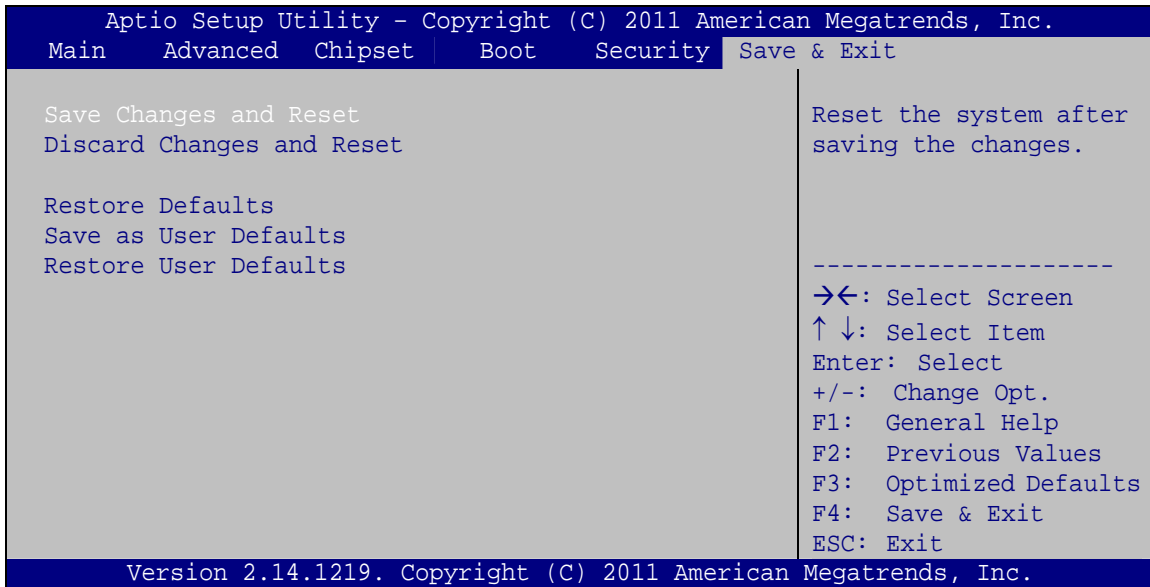
Use the **Administrator Password** to set or change a administrator password.

→ User Password

Use the **User Password** to set or change a user password.

5.7 Exit

Use the **Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 20:Exit

→ Save Changes and Reset

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

→ Discard Changes and Reset

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

→ Restore Defaults

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

→ Save as User Defaults

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

→ Restore User Defaults

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

Chapter

6

Software Drivers

6.1 Available Software Drivers

**NOTE:**

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system:

- Chipset
- Graphics
- LAN
- Audio

Installation instructions are given below.

6.2 Starting the Driver Program

To access the driver installation programs, please do the following.

Step 1: Insert the CD that came with the system into a CD drive connected to the system.

**NOTE:**

If the installation program doesn't start automatically:
Click "Start->Computer->CD Drive->autorun.exe"

Step 2: The driver main menu appears.

Step 3: Click WAFER-CV-D25501/N26001.

Step 4: The list of drivers appears.

6.3 Chipset Driver Installation

To install the chipset driver, please do the following.

Step 1: Access the driver list. (See **Section 6.2**)

Step 2: Click “1-Chipset”.

Step 3: Go to the 32-bit or 64-bit folder that corresponds to your OS version.

Step 4: Open the **Intel Chipset Software Installation Utility** folder.

Step 5: Double click the **infinst_autol** icon.

Step 6: The setup files are extracted as shown in **Figure 6-1**.

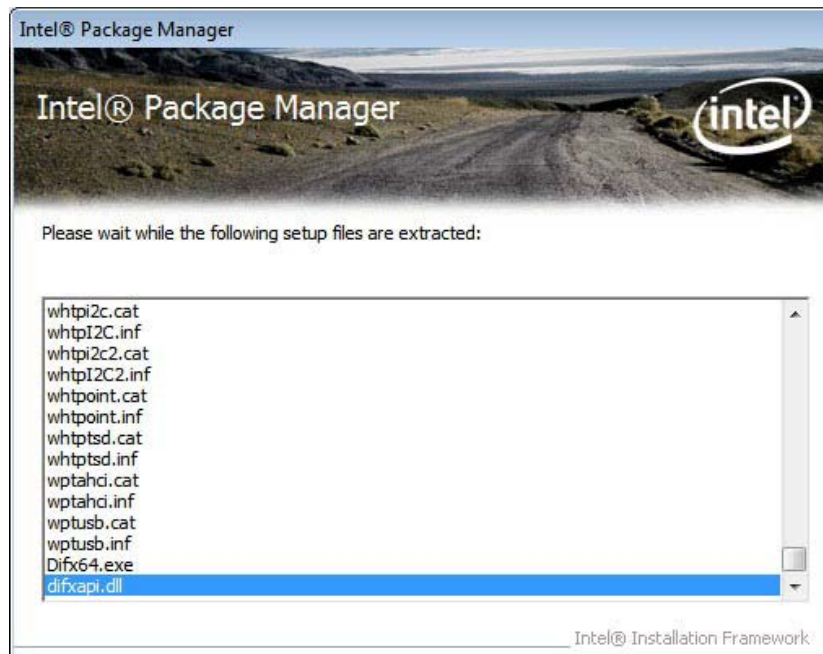


Figure 6-1: Chipset Driver Screen

Step 7: When the setup files are completely extracted, the **Welcome Screen** in **Figure 6-2** appears.



Figure 6-2: Chipset Driver Welcome Screen

Step 8: Click **Next** to continue.

Step 9: The license agreement in **Figure 6-3** appears.

Step 10: Read the **License Agreement**.

Step 11: Click **Yes** to continue.

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Figure 6-3: Chipset Driver License Agreement

Step 12: The Read Me file in **Figure 6-4** appears.

Step 13: Click **Next** to continue.

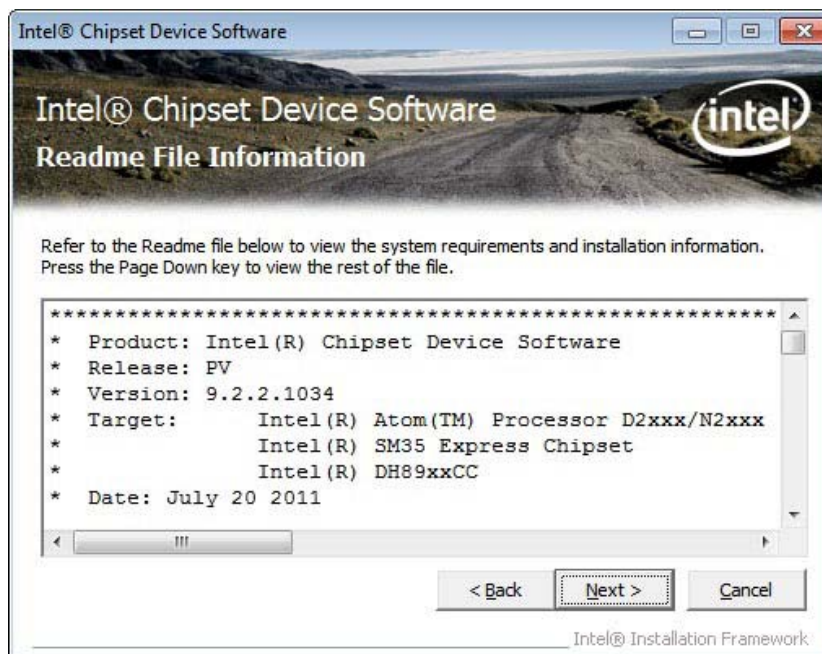


Figure 6-4: Chipset Driver Read Me File

Step 14: Setup Operations are performed as shown in Figure 6-5.



Figure 6-5: Chipset Driver Setup Operations

Step 15: Once the Setup Operations are complete, click **Next** to continue.

Step 16: The **Finish** screen appears.

Step 17: Select “Yes, I want to restart the computer now” and click the **Finish** icon.

See Figure 6-6.



Figure 6-6: Chipset Driver Installation Finish Screen

6.4 Graphics Driver Installation



NOTE:

Due to Intel® GMA driver limitation, the monitor connected to the VGA connector may become extended desktop or not have signal to it after restarting from the graphics driver installation. To work out this limitation, press the Ctrl+Alt+F1 hotkey to switch the primary display to CRT mode.

To install the graphics driver, please do the following.

Step 1: Access the driver list. (See **Section 6.2**)

Step 2: Click “**2-Graphics**”.

Step 3: Open the 32-bit or 64-bit folder that corresponds to your OS version.

Step 4: Double click the **Setup** icon.

Step 5: The **Welcome Screen** in **Figure 6-7** appears.

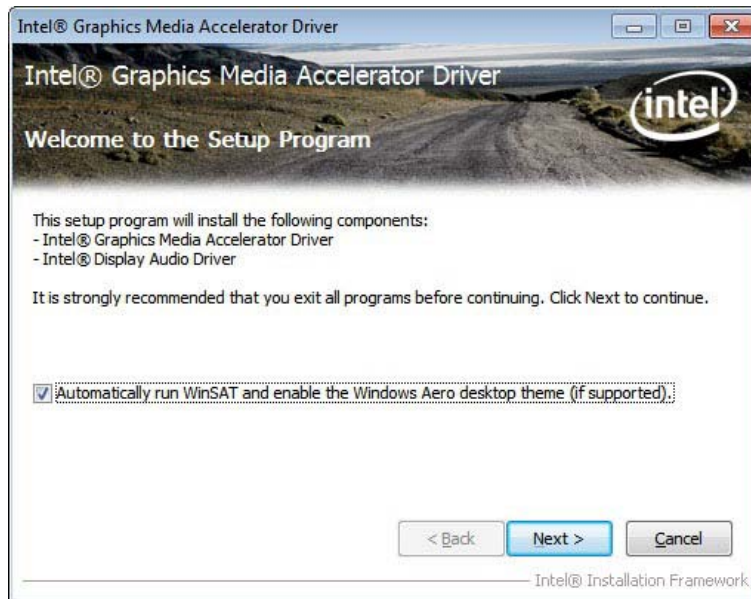


Figure 6-7: Graphics Driver Welcome Screen

Step 6: Click **Next** to continue.

Step 7: The license agreement in **Figure 6-8** appears.

Step 8: Read the **License Agreement**.

Step 9: Click **Yes** to continue.

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Figure 6-8: Graphics Driver License Agreement

Step 10: The Read Me file in **Figure 6-9** appears.

Step 11: Click **Next** to continue.

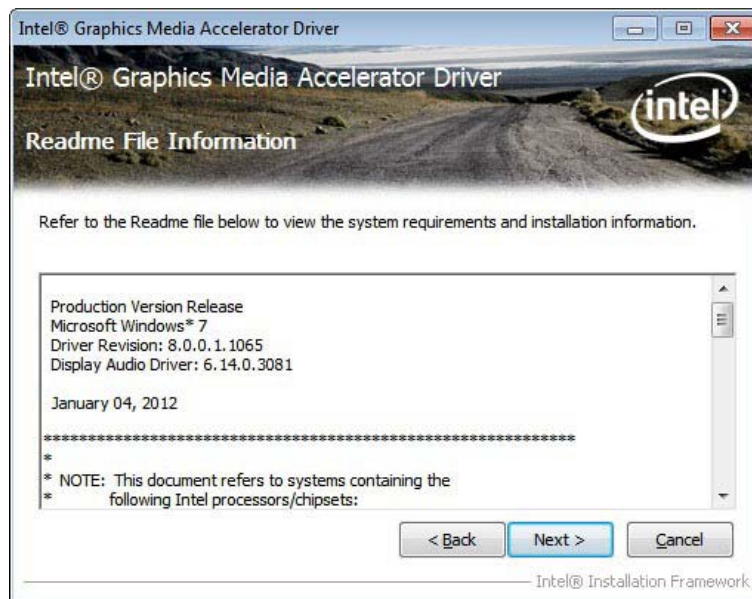


Figure 6-9: Graphics Driver Read Me File

Step 12: Setup Operations are performed as shown in **Figure 6-10**.

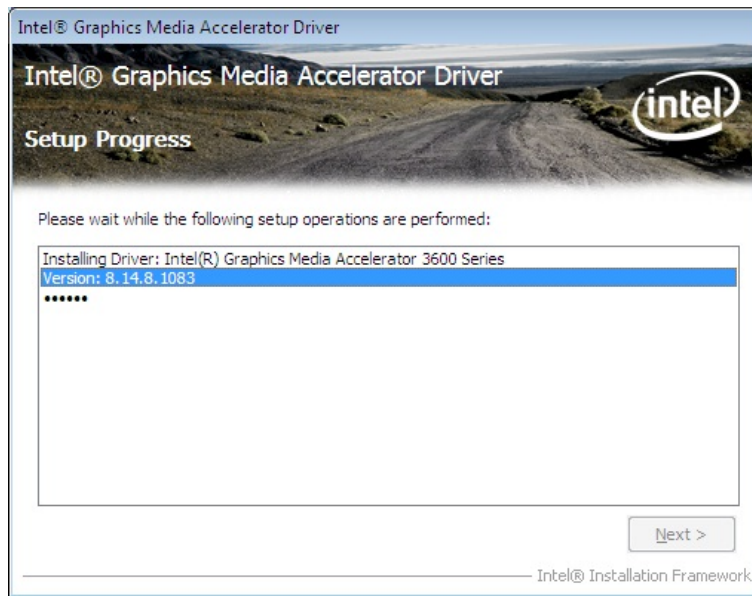


Figure 6-10: Graphics Driver Setup Operations

Step 13: Once the **Setup Operations** are complete, click the **Next** icon to continue.

Step 14: The **Finish** screen appears.

Step 15: Select “**Yes, I want to restart the computer now**” and click the **Finish** icon.

See **Figure 6-11**.

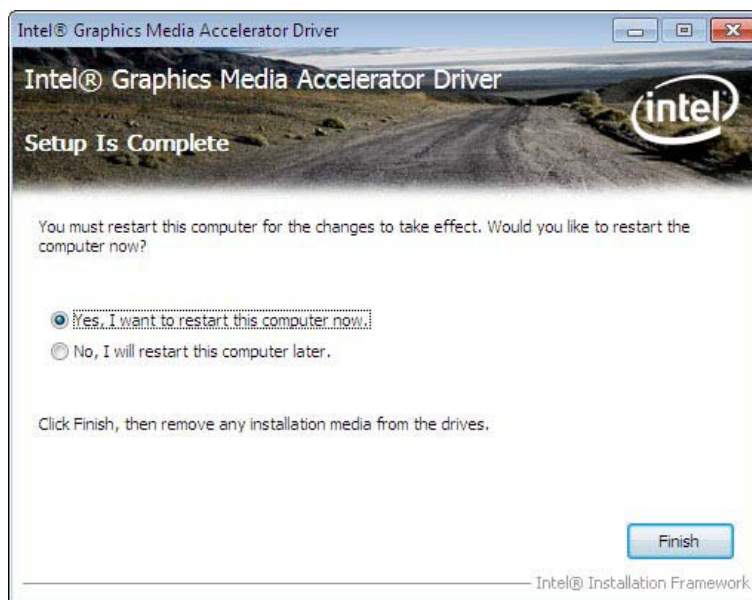


Figure 6-11: Graphics Driver Installation Finish Screen

6.5 LAN Driver Installation

To install the LAN driver, please do the following.

Step 1: Access the driver list shown in **Error! Reference source not found..** (See **Section 6.2**)

Step 2: Click **"3-LAN"**.

Step 3: Go to the **Win7 > Install_Win7_7048_09162011** folder.

Step 4: Double click the **setup** icon.

Step 5: The **Welcome** screen in **Figure 6-12** appears.

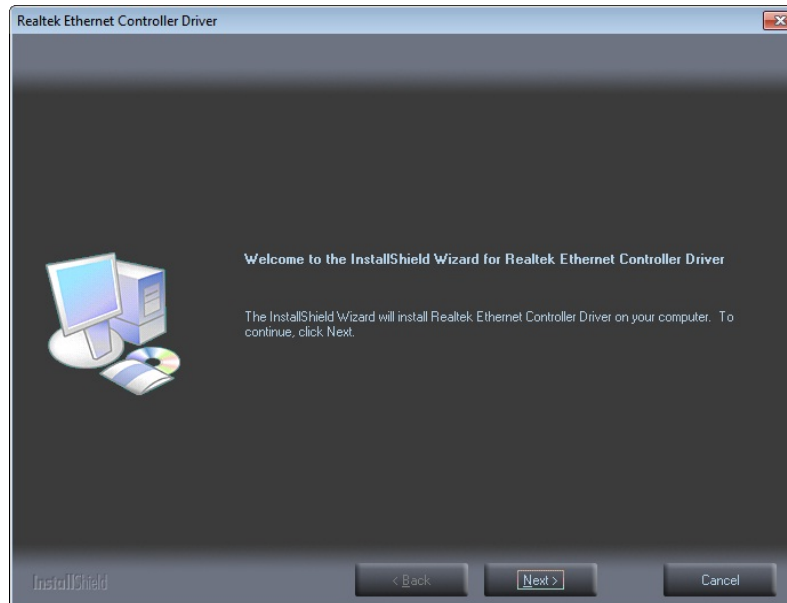


Figure 6-12: LAN Driver Welcome Screen

Step 6: Click **Next** to continue.

Step 7: The **Ready to Install** screen in **Figure 6-13** appears.

Step 8: Click **Install** to proceed with the installation.

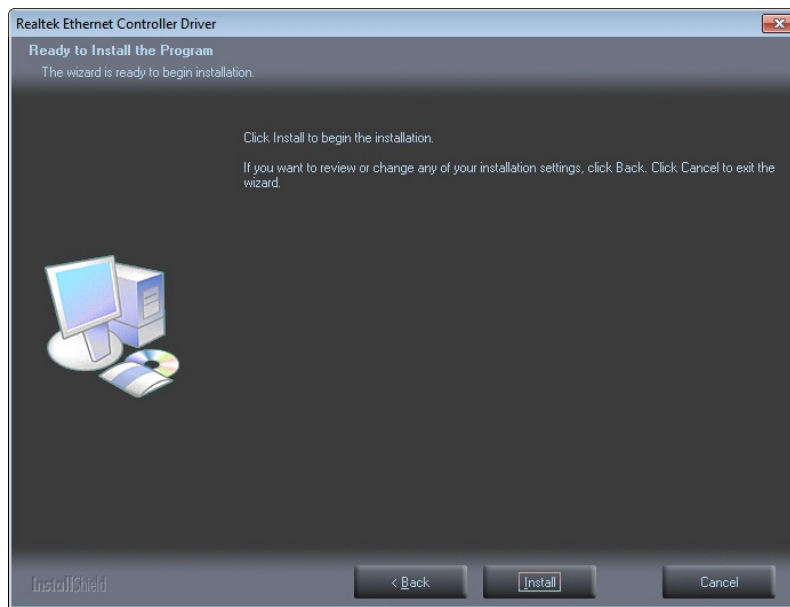


Figure 6-13: LAN Driver Installation

Step 9: The program begins to install.

Step 10: When the driver installation is complete, the screen in **Figure 6-14** appears.

Step 11: Click **Finish** to exit.

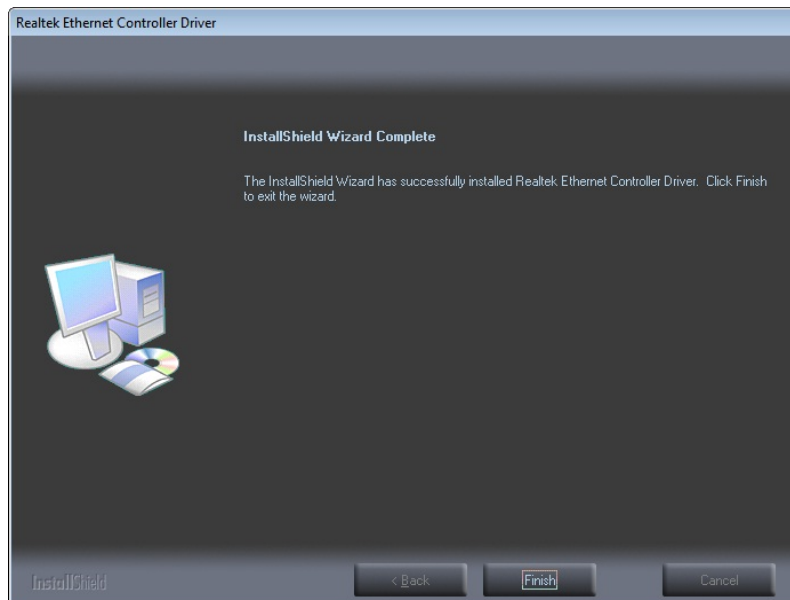


Figure 6-14: LAN Driver Installation Complete

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6.6 Audio Driver Installation

To install the Audio driver, please do the following.

Step 1: Access the driver list. (See **Section 6.2**)

Step 2: Click "**4-Audio**".

Step 3: Open the **Win7** folder.

Step 4: Double click the **Vista_Win7_R263** icon.

Step 5: The installation files are extracted as shown in **Figure 6-15**.

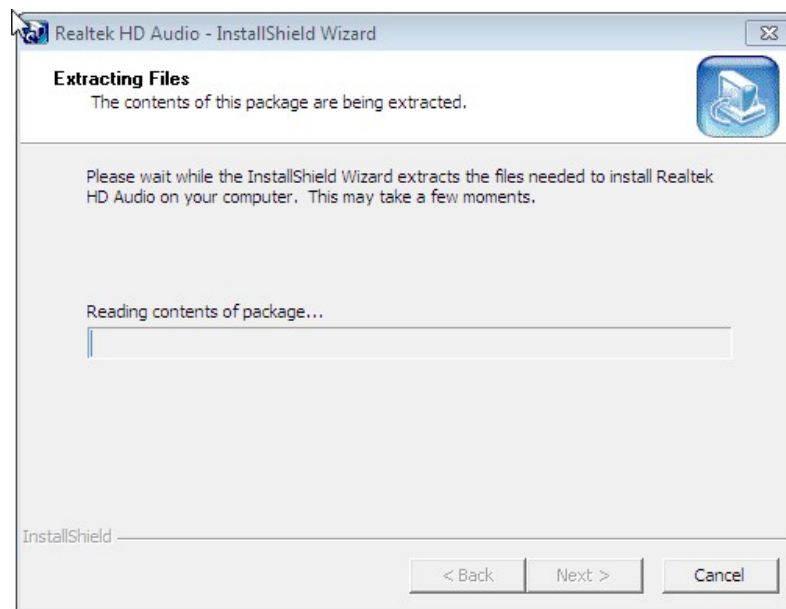


Figure 6-15: Audio Driver Installation File Extraction

Step 6: The **Welcome** screen in **Figure 6-16** appears.

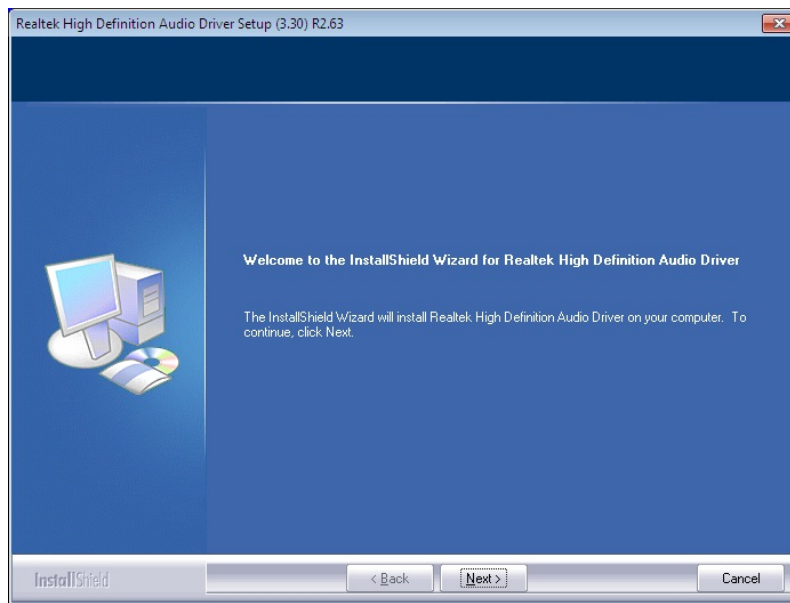


Figure 6-16: Audio Driver Welcome Screen

Step 7: Click **Next** to continue.

Step 8: The program begins to install.

Step 9: The installation progress can be monitored in the progress bar shown in **Figure 6-17**.

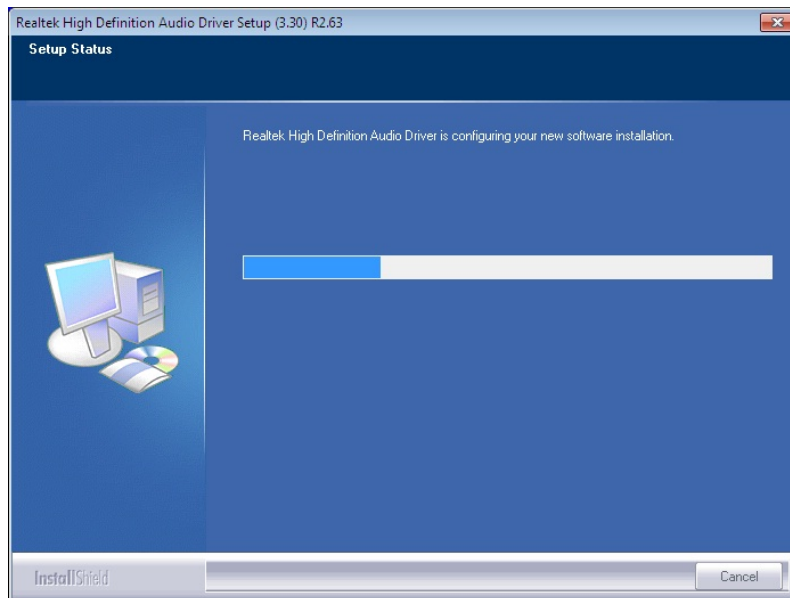


Figure 6-17: Audio Driver Installation

Step 10: When the driver installation is complete, the screen in **Figure 6-18** appears.

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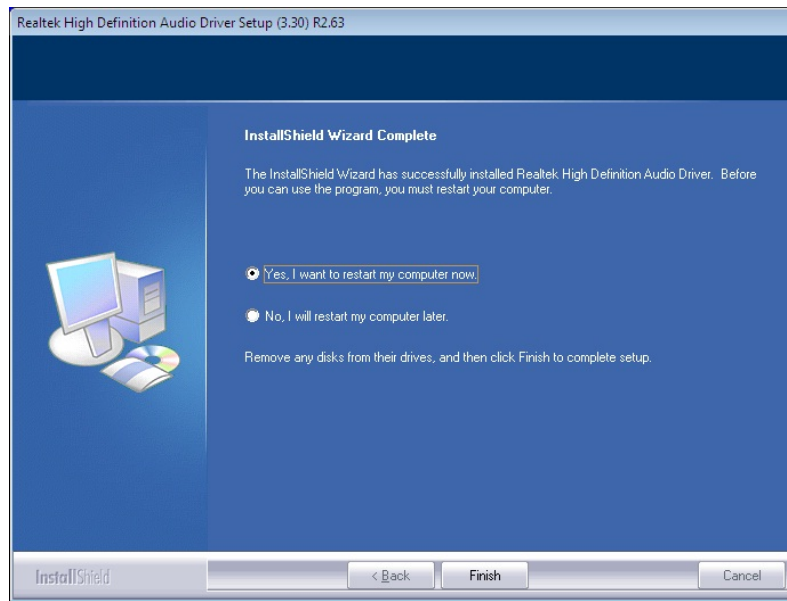


Figure 6-18: Audio Driver Installation Complete

Step 11: Select “Yes, I want to restart my computer now” and click **Finish**.

Step 12: The system reboots.

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with specifications for CE marking. If the user modifies and/or installs other devices in the equipment, the CE conformity declaration may no longer apply.

FCC WARNING

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired 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.

Appendix

B

BIOS Options

WAFER-CV-D25501/N26001 3.5" SBC

Below is a list of BIOS configuration options in the BIOS chapter.

System Overview	64
System Date [xx/xx/xx]	64
System Time [xx:xx:xx]	65
ACPI Sleep State [S1 (CPU Stop Clock)]	66
Wake system with Fixed Time [Disabled]	67
Hyper-Threading [Enabled]	69
Configure SATA as [IDE]	69
Legacy USB Support [Enabled]	70
Serial Port [Enabled]	72
Change Settings [Auto]	72
Serial Port [Enabled]	72
Change Settings [Auto]	73
Serial Port [Enabled]	73
Change Settings [Auto]	73
Serial Port [Enabled]	74
Change Settings [Auto]	74
PC Health Status	76
CPU_FAN1/SYS_FAN Smart Fan Control [Auto Duty-Cycle Mode]	77
CPU/System Temperature n	77
Console Redirection [Disabled]	78
Terminal Type [ANSI]	78
Bits per second [115200]	78
Data Bits [8]	79
Parity [None]	79
Stop Bits [1]	79
Auto Recovery Function [Disabled]	80
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Appendix

C

Terminology

AC '97	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.
DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.

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DIMM	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
DIO	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
EIDE	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.
EIST	Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage.
FSB	The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.
GbE	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
HDD	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
ICH	The Input/Output Control Hub (ICH) is an Intel® Southbridge chipset.
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.
LCD	Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.

LVDS	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
RAM	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

D

Digital I/O Interface

D.1 Introduction

The DIO connector on the WAFER-CV-D25501/N26001 is interfaced to GPIO ports on the Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.



NOTE:

For further information, please refer to the datasheet for the Super I/O chipset.

The BIOS interrupt call **INT 15H** controls the digital I/O.

INT 15H:

AH – 6FH		
<u>Sub-function:</u>		
AL – 8	:	Set the digital port as INPUT
AL	:	Digital I/O input value

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D.2 Assembly Language Sample 1

```
MOV    AX, 6F08H    ; setting the digital port as input
INT     15H          ;
```

AL low byte = value

AH – 6FH
Sub-function:
AL – 9 : Set the digital port as OUTPUT
BL : Digital I/O input value

D.3 Assembly Language Sample 2

```
MOV    AX, 6F09H    ; setting the digital port as output
MOV    BL, 09H       ; digital value is 09H
INT     15H          ;
```

Digital Output is 1001b

Appendix

E

Watchdog Timer

**NOTE:**

The following discussion applies to DOS environment. Contact IEI support or visit the IEI website for specific drivers for other operating systems.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table E-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.


NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

EXAMPLE PROGRAM:

; INITIAL TIMER PERIOD COUNTER

;

W_LOOP:

;

```

MOV      AX, 6F02H      ;setting the time-out value
MOV      BL, 30          ;time-out value is 48 seconds
INT      15H

```

;

; ADD THE APPLICATION PROGRAM HERE

;

```

CMP      EXIT_AP, 1      ;is the application over?
JNE      W_LOOP          ;No, restart the application

```

```

MOV      AX, 6F02H      ;disable Watchdog Timer
MOV      BL, 0          ;
INT      15H

```

;

; EXIT ;

Appendix

F

Hazardous Materials Disclosure

F.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

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Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
Display	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O
Battery	O	O	O	O	O	O
<p>O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006</p> <p>X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006</p>						

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯 醚 (PBDE)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。						
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						