3.5" SBC with Intel® Atom™ N270 1.6GHz Processor, VGA/ 18-bit+24-bit dual-channel LVDS, PCIe GbE, CF type II, SATA, USB, Audio and 4 COM

WAFER-945GSELVDS2 Quick Installation Guide

Version 1.0

Oct. 05, 2009

Package Contents

WAFER-945GSELVDS2 package includes the following items:

- 1 x WAFER-945GSELVDS2 Single Board Computer
- 2 x RS-232 Cable
- 2 x SATA Cable
- 1x KB/MS Cable
- 1x Audio Cable
- 1 x Enclosure Heatsink
- 1 x Mini Jumper Pack
- 1 x Utility CD
- 1 x QIG (Quick Installation Guide)

Specifications

- CPU: Intel® Atom™ N270 1.6GHz/512KB L2 Cache processor with a 533MHz FSB
- System Chipset: Intel® 945GSE +ICH7M
- BIOS: AMI BIOS, 8Mbit BIOS SPI Flash ROM
- System memory: 1 x 200-pins 533/400MHz DDR2 SDRAM SO-DIMM (supported max. 2GB)
- Ethernet: 1 x Realtek RTL8111CP GbE Controller (PCIe x1 Interface)
- I/O Interface:

  2 x SATA

  6 x USB 2.0 (4 on rear side, 2 by pin-header)

  1 x CF Type II

  3 x RS-232 (1 on rear side, 2 by pin-header)

  1 x RS-232/422/485 (by pin-header)

  1 x KB/MS by 1x6 pins wafer-header
- Expansion:

  1 x PCIe mini card slot
- Audio: Realtek ALC655 with AC'97 Audio codec by 2x5 pin-header
- Digital I/O: 8-bit digital I/O, 4-bit input/ 4-bit output by super I/O
- First Super I/O: ITE IT8718F
- Second Super I/O: Fintek F81216AD
- Display Interface:

  Analog CRT: Support for CRT Hot plug

  18-bit dual-channel LVDS from Intel® 945GSE

  18/24-bit dual-channel LVDS support by SDVO to LVDS Transmitter: Chrontel CH7308B
- Watchdog timer:

  Software programmable supports 1~255 sec. system reset by First Super I/O : ITE IT8718F
- Power Supply:

  AT/ATX support, +5V for CPU Board, +12V for LCD Inverter and Fan

- Power Consumption:

  5V@2.49A (Intel® Atom™ N270 1.6GHz processor with 2GB DDR2 DRAM)
- FAN: 3-pin +12V FAN
- Operating Humidity: 5% ~ 95%, non-condensing
- Operating Temperature: 0 ~ 60°C(32 ~ 140°F)
- Dimension: 146 mm x 102 mm
- Weight: GW: 700g; NW: 350g

Ordering Information

WAFER-945GSELVDS2-N270-R10:
3.5" SBC with Intel® Atom™ N270 1.6GHz Processor, VGA/ 18-bit+24-bit dual-channel LVDS, PCIe GbE, CF type II, SATA, USB, Audio and 4 COM
32000-070301-RS: Dual ports USB cable
32200-026500-RS: RS-232/422/485 cable
32100-052100-RS: ATX Power Cable
32100-088600-RS/32102-00100-100-RS/32102-000100-200-RS: SATA Power Cable

WARNING:

When running the WAFER-945GSELVDS2, do not put the WAFER-945GSELVDS2 directly on a surface that can not dissipate system heat, especially the wooden or plastic desk. It is highly recommended to run the WAFER-945GSELVDS2
→ on a heat dissipation surface or
→ using copper pillars to hold the board up from the desk below

Jumpers setting

LABEL	FUNCTION
J_CMOS1	CMOS state setting
J_VLVDS1	LVDS1 Voltage Selection
JP1	COM2 Port Mode setting
J_VLVDS2	LVDS2 Voltage Selection
JCF1	CF Card setting
ATXCTL1	AT Power Mode Setting
JP2	Audio AVDD Power Source
J_LCD_TYPE1	LVDS Panel Resolution Selection

J_CMOS1: Clear CMOS Setup	
J_CMOS1	**DESCRIPTION**
Short 1-2 (default)	**Keep CMOS Setup (Normal Operation)**
Short 2-3	**Clear CMOS Setup**

JP1: configure COM2 Mode	
JP1	**DESCRIPTION**
Short 1-2 (default)	**RS - 232**
Short 3-4	**RS - 422**
Short 5-6	**RS - 485**
Short 5-6 Short 7-8	**RS-485 with RTS Control**

J_VLVDS1: LVDS1 Voltage Selection	
J_VLVDS1	**DESCRIPTION**
1-2 (default)	**+3.3V LVDS**
2-3	**+5V LVDS**

JCF1: Configure CF Card type	
JCF1	**DESCRIPTION**
Open (default)	**Slave**
Short 1-2	**Master**

J_VLVDS2: LVDS2 Voltage Selection	
J_VLVDS2	**DESCRIPTION**
1-2 (default)	**+3.3V LVDS**
2-3	**+5V LVDS**

ATXCTL1: AT Power Mode Setting
AT Mode: Short 2-3 (Default)
ATX Mode: Use PS_ON# & 5VSB cable

ATXCTL1	**DESCRIPTION**
Short 2-3 (default)	**AT Power Mode**
Open	**ATX Power Mode**

JP2: Audio AVDD Power Source	
JP2	DESCRIPTION
1-2 (default)	AVDD Power on by +5V
2-3	AVDD Power on by LDO +12V to +5V

J_LCD_TYPE1: LVDS Panel Resolution Selection				DESCRIPTION
LVDS2		LVDS1		
7-8	5-6	3-4	1-2	
Open	Open	Open	Open	LVDS1 800X600 LVDS2 1024X768 18-bit (default)
		Open	Short	LVDS1 1024X768 18-bit
		Short	Open	LVDS1 1280X1024 36-bit
		Short	Short	LVDS1 1400X1050 36-bit
Open	Short			LVDS2 1024X768 24-bit
Short	Open			LVDS2 1280X1024 36-bit
Short	Short			LVDS2 1280X1024 48-bit

Table of Connectors

LABEL	FUNCTION
VGA1	VGA 15-pin Female Connector
USB_C23 USB_C45	External 2 Ports USB Connectors
LAN1	RJ-45 LAN Connectors
KB_MS1	Keyboard & Mouse Connector
COM1	External COM Port Connector (RS-232)
COM2	Internal Serial Port Connector (RS-232/422/485)
COM3, COM4	Internal Serial Port Connectors (RS-232)
USB01	Internal 2 Ports USB Connector
AUDIO1	Audio Connector
SATA1 SATA2	Serial ATA Connectors
CPU_FAN1	Fan Connector
ATXCTL1	ATX Power Control Connector
ATXPWR1	Main Power Input Connector
PWRBTN1	Power Button
RESET1	Reset Button
DIO1	Digital I/O Connector
LVDS1	18-bit dual-channel LVDS Panel Connector
INVERTER1	LVDS1 Panel Backlight +12V Power Source
BAT1	Battery connector
LVDS2	18/24-bit dual-channel LVDS Panel Connector
INVERTER2	LVDS2 Panel Backlight +12V Power Source
LED_C1	LED Indicators, PWRLED, HDDLED and +5V Power output Connector
CF1	CF Card Slot
JSPI1	Flash BIOS SPI ROM connector
CN4	PCIe Mini Card Slot
DIMM1	DDR2 SO-DIMM slot

VGA1: 15-pin Female Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	CRT_PLUG#
7	GND	8	GND
9	VCC (+5V)	10	GND
11	NC	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

USB_C23, USB_C45: External 2 ports USB Connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VCC (+5V)	5	VCC (+5V)
2	DATA-	6	DATA-
3	DATA+	7	DATA+
4	GND	8	GND

LAN1: RJ-45 LAN Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	MDIA3-	5	MDIA1+
2	MDIA3+	6	MDIA2+-
3.	MDIA2-	7	MDIA0-
4.	MDIA1-	8	MDIA0+

KB_MS1: 6-pin Keyboard/Mouse Connector	
PIN NO.	**DESCRIPTION**
1	VCC (+5V)
2	Mouse Data
3	Mouse Clock
4	Keyboard Data
5	Keyboard Clock
6	GND

COM1: External Serial Port Connector (RS-232)	
PIN NO.	**DESCRIPTION**
1	DATA CARRIER DETECT (DCD#)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR#)
5	GND (GND)
6	DATA SET READY (DSR#)
7	REQUEST TO SEND (RTS#)
8	CLEAR TO SEND (CTS#)
9	RING INDICATOR (RI#)

COM2 : Internal Serial Port Connector (RS-232/422/485)			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	DATA CARRIER DETECT (DCD#)	2	DATA SET READY (DSR#)
3	RECEIVE DATA (RXD)	4	REQUEST TO SEND (RTS#)
5	TRANSMIT DATA (TXD)	6	CLEAR TO SEND (CTS#)
7	DATA TERMINAL READY (DTR#)	8	RING INDICATOR (RI#)
9	GND	10	N/C
11	TXD485+	12	TXD485#
13	RXD485+	14	RXD485#

COM3, COM4 : Internal Serial Port Connectors (RS-232)			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	DATA CARRIER DETECT (DCD#)	2	DATA SET READY (DSR#)
3	RECEIVE DATA (RXD)	4	REQUEST TO SEND (RTS#)
5	TRANSMIT DATA (TXD)	6	CLEAR TO SEND (CTS#)
7	DATA TERMINAL READY (DTR#)	8	RING INDICATOR (RI#)
9	GND	10	GND

USB01: Internal 2 ports USB Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VCC (+5V)	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VCC (+5V)

AUDIO1 : Audio Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	LINE_OUTR	2	LINEIN_R
3	GND_AUDIO	4	GND_AUDIO
5	LINE_OUTL	6	LINEIN_L
7	GND_AUDIO	8	GND_AUDIO
9	MICIN	10	MICIN

SATA1 & SATA2 : Serial ATA Connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND	8	N/C

CPU_FAN1 : CPU Fan Connector	
PIN NO.	**DESCRIPTION**
1	GND
2	+12V (PWM)
3	FANIO1

ATXCTL1 : ATX Power Control Connector AT Mode: Short 2-3 (Default) ATX Mode: Use PS_ON# & 5VSB cable	
PIN NO.	**DESCRIPTION**
1	5VSB
2	GND
3	PS_ON#

ATXPWR1 : Main Power Input Connector	
PIN NO.	**DESCRIPTION**
1	+12V
2	GND
3	GND
4	VCC (+5V)

PWRBTN1: Power Button	
PIN NO.	**DESCRIPTION**
1	PWRBTSW-
2	GND

RESET1: Reset Button	
PIN NO.	**DESCRIPTION**
1	PM_RESET-
2	GND

DIO1 : Digital Input / Output Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	VCC (+5V)
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

LVDS1: 18-bit dual-channel LVDS Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	GND
3	A_Y0	4	A_Y0#
5	A_Y1	6	A_Y1#
7	A_Y2	8	A_Y2#
9	A_CK	10	A_CK#
11	NC	12	NC
13	GND	14	GND
15	B_Y0	16	B_Y0#
17	B_Y1	18	B_Y1#
19	B_Y2	20	B_Y2#
21	B_CK	22	B_CK#
23	NC	24	NC
25	GND	26	GND
27	VCC_LCD	28	VCC_LCD
29	VCC_LCD	30	VCC_LCD

INVERTER1: LVDS1 Panel Backlight +12V Power Source	
PIN NO.	**DESCRIPTION**
1	LCD_BKLTCTL
2	GND
3	+12V
4	GND
5	BACKLIGHT ENABLE

BAT1: +3V Battery Connector	
PIN NO.	**DESCRIPTION**
1	BAT (+3.3V)
2	GND

Note: Duo to the space limitation, the motherboard is shipped with the battery connected but not attached on a surface. Attaching the battery to the Chrontel CH7308B IC chip will cause the interruption of the CF card. To prevent this happen, please attach the battery onto the motherboard after completing the system installation. The suggested places for attaching battery are:

1. Super I/O chip
2. CF card
3. Others

LVDS2: 18**/**24-bit dual-channel LVDS Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	GND
3	A_Y0	4	A_Y0#
5	A_Y1	6	A_Y1#
7	A_Y2	8	A_Y2#
9	A_CK	10	A_CK#
11	A_Y3	12	A_Y3#
13	GND	14	GND
15	B_Y0	16	B_Y0#
17	B_Y1	18	B_Y1#
19	B_Y2	20	B_Y2#
21	B_CK	22	B_CK#
23	B_Y3	24	B_Y3#
25	GND	26	GND
27	VCC_LCD	28	VCC_LCD
29	VCC_LCD	30	VCC_LCD

INVERTER2: LVDS2 Panel Backlight +12V Power Source	
PIN NO.	**DESCRIPTION**
1	LCD_BKLTCTL
2	GND
3	+12V
4	GND
5	BACKLIGHT ENABLE

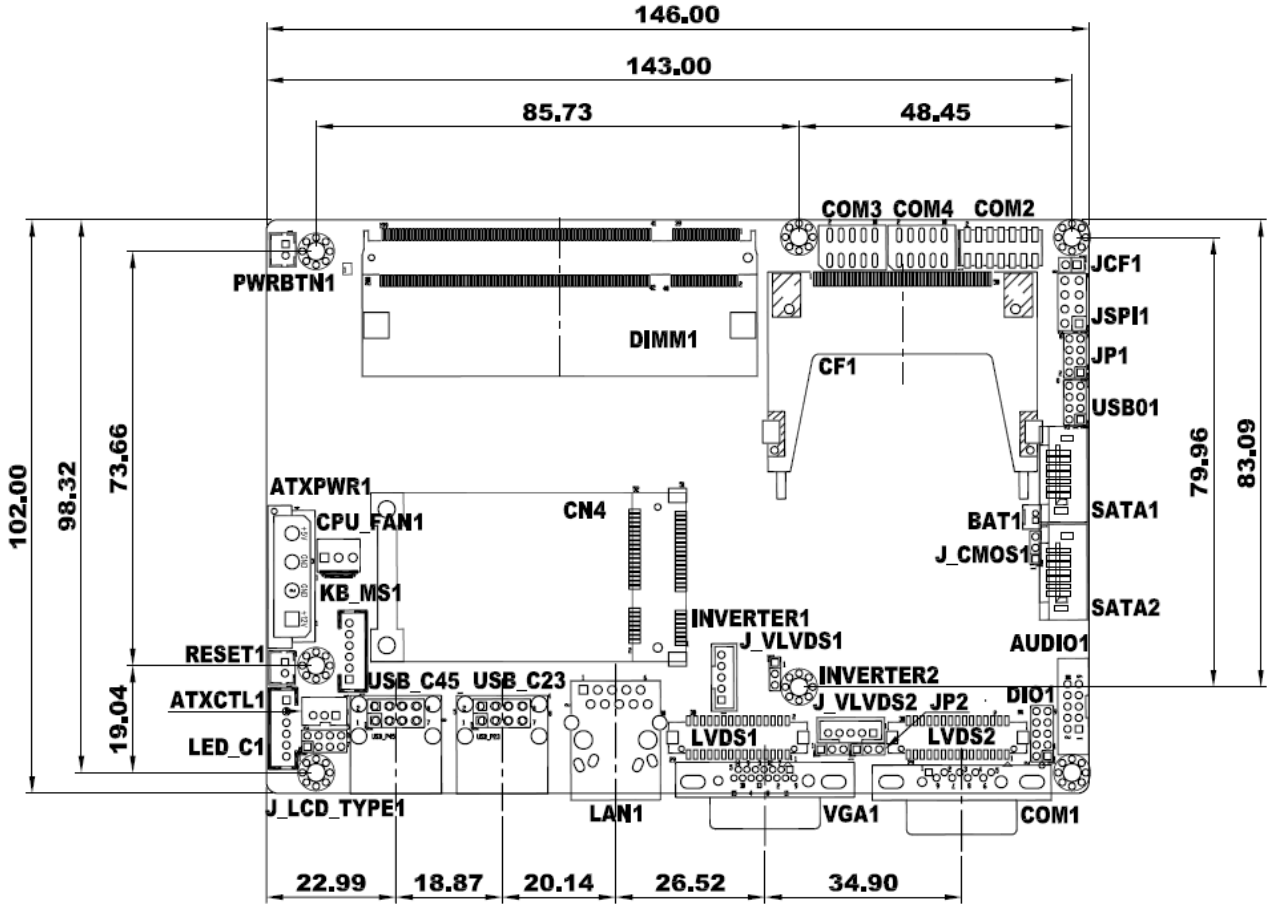
LED_C1: 6-pin LED Indicators and +5V Output connector		
	PIN NO.	**DESCRIPTION**
+5V Power Output	1	VCC (+5V)
	2	GND
PWRLED	3	VCC (+5V)
	4	GND
HDDLED	5	VCC (+5V)
	6	-HDLED

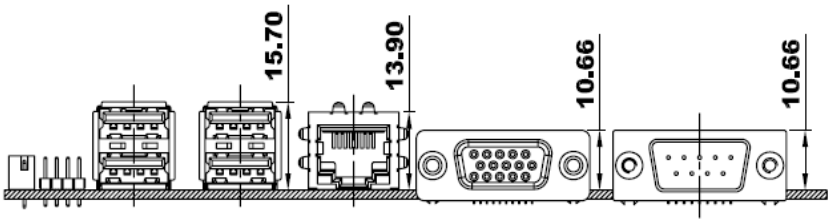
CF1 : CF Card Slot			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	26	CD1#
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CE#	32	CE2#
8	A10	33	VS1#
9	OE#	34	IOR#
10	A9	35	IOW#
11	A8	36	WE#
12	A7	37	IRQ
13	VCC	38	VCC
14	A6	39	CSEL#
15	A5	40	VS2#
16	A4	41	RESET#
17	A3	42	WAIT#
18	A2	43	INPACK#
19	A1	44	REG#
20	A0	45	BVD2
21	D0	46	BVD1
22	D1	47	D8
23	D2	48	D9
24	IOCS16#	49	D10
25	CD2#	50	GND2

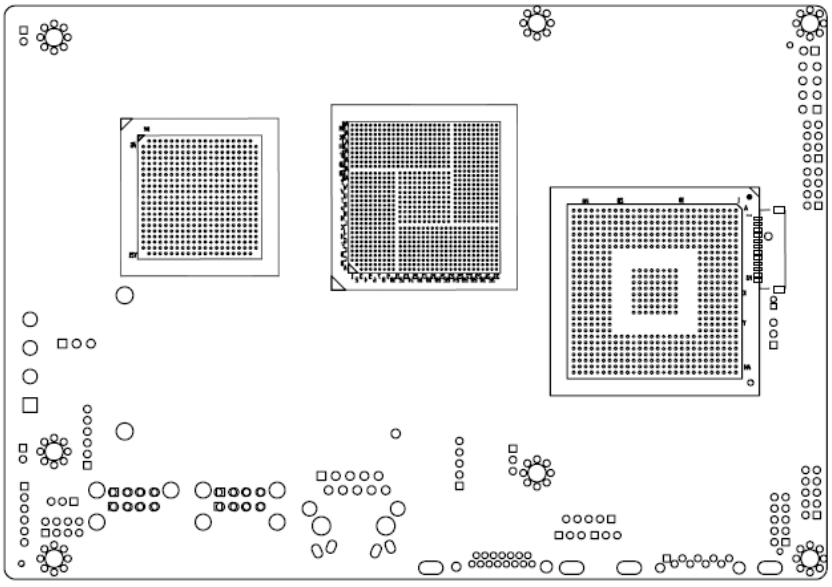
JSPI1 : Flash BIOS SPI ROM Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	SPI_VCC (+3.3V)	2	GND
3	SPI_CS#	4	SPI_CLK
5	SPI_MISO	6	SPI_MOSI
7	N/C	8	N/C

CN4: PCIe Mini Card Slot			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	PCIE_WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	1.5V
7	CLKREQ#	8	LFRAME#
9	GND	10	LAD3
11	CLK-	12	LAD2
13	CLK+	14	LAD1
15	GND	16	LAD0
17	PCIRST#	18	GND
19	LPC	20	VCC3
21	GND	22	PCIRST#
23	PERN2	24	3VDual
25	PERP2	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PETN2	32	SMBDATA
33	PETP2	34	GND
35	GND	36	USBD-
37	N/C	38	USBD+
39	N/C	40	GND
41	N/C	42	N/C
43	N/C	44	RF_LINK#
45	N/C	46	BLUELED#
47	N/C	48	1.5V
49	N/C	50	GND
51	N/C	52	VCC3

Board Layout: Jumper and Connector Locations







Board dimensions with Heat Sink