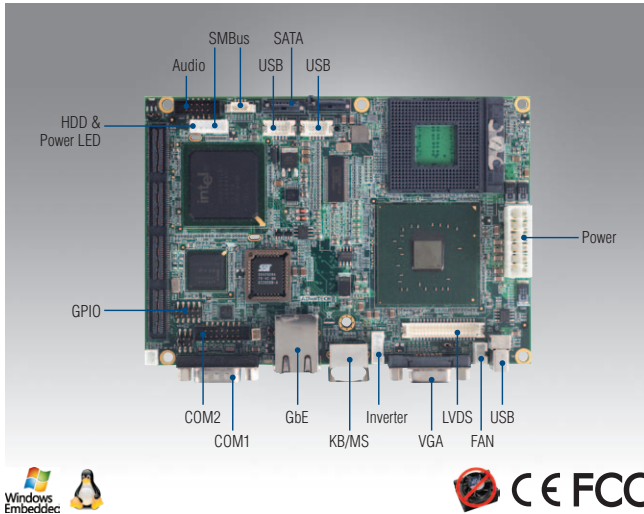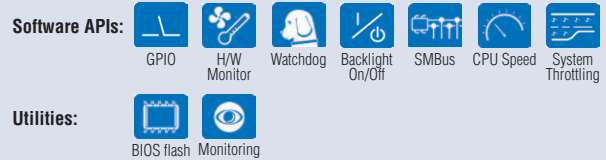# PCM-9382

Intel® Core™2 Duo Processor 3.5" SBC, VGA, LVDS, GbE, USB, SATA, SSD
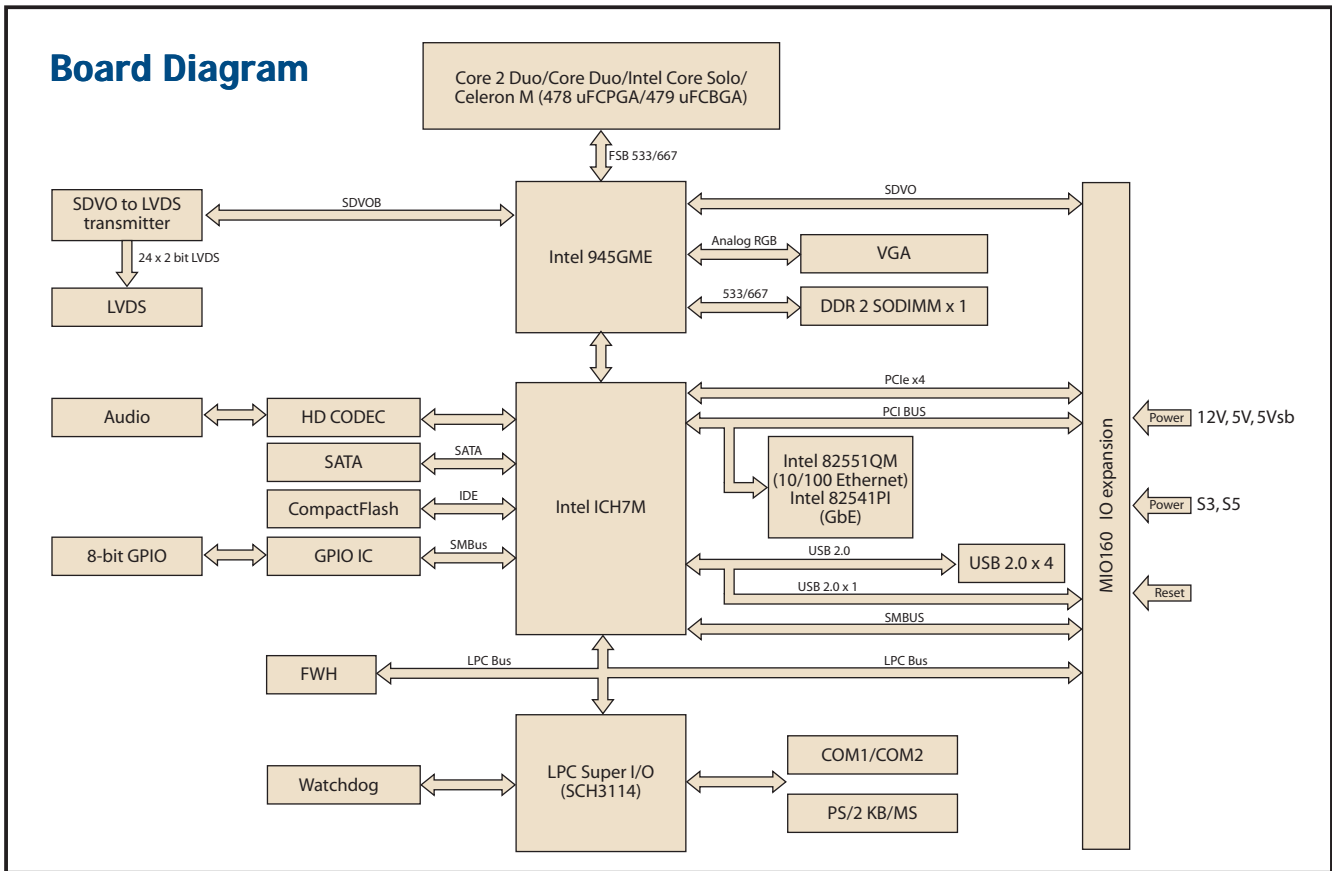

Features

- Embedded Intel® Core™ 2 Duo /Core™ Duo processor LV/ ULV
- Supports 48-bit LVDS/ VGA display
- Supports GbE and HD audio
- Supports five USB 2.0 ports and one SATA II
- Supports embedded software API and utility

Software APIs: GPIO H/W Monitor Watchdog Backlight On/Off SMBus CPU Speed System Throttling

Utilities: BIOS flash Monitoring

Specifications

Processor System	CPU	Intel Core 2 Duo/Core Duo/Core Solo FSB667 MHz socket 478 type, up to Intel Core 2 Duo T 7400 Intel Celeron M 1.06 GHz (423) Onboard CPU
	Front Side Bus	533/667 MHz
	Frequency	Depends on processor
	System Chipset	Intel 945GME + ICH7M
	BIOS	Award 4 Mb Flash ROM BIOS
Memory	Technology	DDRII 533/667 MHz SO-DIMM
	Max. Capacity	2 GB
	Socket	1 x 200-pin SODIMM
Display	Chipset	Intel 945GME
	VRAM	DVMT 4.0 supports up to 224 MB
	Graphics Engine	Mobile Intel GMA 950 3D/2D engine
	LVDS	1 x LVDS (single channel 24-bit or dual channel 48-bit LVDS)
	VGA	VGA: up to 2048 x 1536 @ 32bpp (85 Hz)
	Dual Display	VGA + LVDS
Ethernet	Speed	10/100 Mbps (Supports Wake on LAN)
	Controller	Intel 82551QM 10/100 Mbps Ethernet Intel 82541PI 10/100/1000 Mbps GbE (Optional)
	Connector	RJ-45 on Ethernet
Audio	Chipset	Realtek ALC888, High Definition Audio (HD), Line-in, Line out, Mic-in
WatchDog Timer		Output System reset, Programmable counter from 1 ~ 255 minutes/ seconds
Storage	CompactFlash	1
	SATA	1 x SATA (Max. Data Transfer Rate 150 MB/s)
Rear I/O	Serial	1 (COM1 supports RS-232) (ESD protection for RS-232: Air gap ±15kV, Contact ±8kV)
	Ethernet	1 (10/100 Mbps)
	KB/Mouse	1
	VGA	1
	USB	1
Internal I/O	USB	4 x USB 2.0
	Serial	1 x COM (ESD protection for RS-232: Air gap ±15kV, Contact ±8kV) COM2 supports RS-232/422/485 (Supports RS-485 auto flow control)
	SMBUS	Supported
	PS/2 KB/Mouse	1
	GPIO	8-bit GPIO
Expansion	MIO 160	1
Power	Power Type	AT/ATX
	Power Supply Voltage	5V + 5% (12V option for LCD, MIO I/O & CPU FAN)
	Power Consumption (Typical)	Typical: 4.64 A @ 5 V, 0.09 A @ 12 V (Core Duo 2.16 G/DDRII 533/512 MB)
	Power Consumption (Max, test in HCT)	MAX: 5.14 A @ 5 V, 0.15 A @ 12 V (Core Duo 2.16 G/DDRII 533/512 MB)
	Power Management	APM1.2, ACPI2.0, wake on LAN, and modem ring-in functions
	Battery	Lithium 3 V / 210 Mah
Environment	Operational	0 ~ 60° C (32 ~ 140° F) (Operating humidity: 40° C @ 85% RH non-condensing)
	Non-Operational	-40° C ~ 85° C and 60° C @ 95% RH non-condensing
Physical Characteristics	Dimensions (L x W)	146 x 102 mm (5.7" x 4")
	Weight	0.85 kg (1.87 lb), weight of total package
	Total Height	30.9mm for PCM-9382F-S0A1E 44.1mm for PCM-9382F-00A1E, PCM-9382FG

Board Diagram

Core 2 Duo/Core Duo/Intel Core Solo/
Celeron M (478 uFCPGA/479 uFCBGA)

FSB 533/667

SDVO to LVDS transmitter

SDVOB

Intel 945GME

SDVO

24 x 2 bit LVDS

Analog RGB

VGA

LVDS

533/667

DDR 2 SODIMM x 1

PCIe x4

Audio

HD CODEC

PCI BUS

Power | 12V, 5V, 5Vsb

SATA

SATA

Intel 82551QM
(10/100 Ethernet)
Intel 82541PI
(GbE)

CompactFlash

IDE

Intel ICH7M

Power | S3, S5

8-bit GPIO

GPIO IC

SMBus

USB 2.0

USB 2.0 x 4

USB 2.0 x 1

Reset

SMBUS

FWH

LPC Bus

LPC Bus

MIO160 IO expansion

Watchdog

LPC Super I/O
(SCH3114)

COM1/COM2

PS/2 KB/MS

Ordering Information

Part No.	CPU	VGA	LVDS	Ethernet	SATA	USB	RS-232	RS-232/422/485	CF	MIO	Power Supply	Thermal Solution	Operating Temp.
PCM-9382F-00A1E	Socket	1	1	1 FE	1	5	1	1	1	1	5 V/12 V	Active	0 ~ 60° C
PCM-9382F-S0A1E	1.06 GHz	1	1	1 FE	1	5	1	1	1	1	5 V or 5 V/12 V	Passive	0 ~ 60° C
PCM-9382FG-00A1E	Socket	1	1	1 GbE	1	5	1	1	1	1	5 V/12 V	Active	0 ~ 60° C

Packing List

Part No.	Description	Quantity
	PCM-9382 SBC	
	Startup Manual	
	Utility CD	
1700006291	SATA cable 30cm	2
1700060202	KB/MS cable 20cm	1
1701140201	RS-232/422/485 cable 20cm	1
1703100152	Audio cable 20cm	1
1700006292	USB cable (2 ports) 17cm	1
1750001940	Cooler (Socket type CPU using)	1
1703150102	SATA Power cable 10cm	1
1700000265	ATX power cable 10cm	1
9689000002	mini Jumper pack	1
1750001940	CPU+945GME cooler 101.6 x 79 x 31.8 cm, 12 V,PCM-9382F-00A1E, PCM-9382FG-00A1E only	1
1960011977T100	CPU+945GME heatsink 101.6 x 79 x 20.1 mm for PCM-9382F-S0A1E only	1
1960009814	ICH7M heatsink for PCM-9382, 30.6 x 30.6 x 9.8 mm	1

Optional Accessories

Part No.	Description
MIO-6250-00A1E	MIO2.0 module w/ 3 10/100 Fast Ethernet (RTL8139)
MIO-6260-00A1E	MIO2.0 IO module w/2 COM, 4 USB
MIO-6260L-00A1E	MIO2.0 IO module w/2 COM, 4 USB, 1 10/100 Ethernet
1700016161	AT Power cable, 2 x 6P to 3 x 4P 10 cm
1700016141	AT power cable, 2 x 6P to 2 x 10P 10 cm

Embedded OS

Embedded OS	Part No.	Description
Win XPE	2070001575	XPE FP2007 P4&PM-B (from 945) V3.0 ENG
Linux		Ubuntu V8.10

Rear I/O view

Value-Added Software Services

Software API: An interface that defines the ways by which an application program may request services from libraries and/or operating systems. Provides not only the underlying drivers required but also a rich set of user-friendly, intelligent and integrated interfaces, which speeds development, enhances security and offers add-on value for Advantech platforms. It plays the role of catalyst between developer and solution, and makes Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

Software APIs

Control

GPIO

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the output status to switch on/off a device. Our API also provides Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.

SMBus

SMBus is the System Management Bus defined by Intel® Corporation in 1995. It is used in personal computers and servers for low-speed system management communications. The SMBus API allows a developer to interface a embedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device control.

I²C

I²C is a bi-directional two wire bus that was developed by Philips for use in their televisions in the 1980s.
The I²C API allows a developer to interface with an embedded system environment and transfer serial messages using the I²C protocols, allowing multiple simultaneous device control.

Display

Brightness Control

The Brightness Control API allows a developer to interface with an embedded device to easily control brightness.

Backlight

The Backlight API allows a developer to control the backlight (screen) on/off in an embedded device.

Monitor

Watchdog

A watchdog timer (WDT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own.
A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.

Hardware Monitor

The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.

Hardware Control

The Hardware Control API allows developers to set the PWM (Pulse Width Modulation) value to adjust fan speed or other devices; it can also be used to adjust the LCD brightness.

Power Saving

CPU Speed

Make use of Intel SpeedStep technology to reduce power power consumption. The system will automatically adjust the CPU Speed depending on system loading.

System Throttling

Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. These APIs allow the user to lower the clock from 87.5% to 12.5%.

Software Utilities

BIOS Flash

The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers' disk. The BIOS Flash utility also provides a command line version and API for fast implementation into customized applications.

Embedded Security ID

The embedded application is the most important property of a system integrator. It contains valuable intellectual property, design knowledge and innovation, but it is easily copied! The Embedded Security ID utility provides reliable security functions for customers to secure their application data within embedded BIOS.

Monitoring

The Monitoring utility allows the customer to monitor system health, including voltage, CPU and system temperature and fan speed. These items are important to a device; if critical errors happen and are not solved immediately, permanent damage may be caused.

eSOS

The eSOS is a small OS stored in BIOS ROM. It will boot up in case of a main OS crash. It will diagnose the hardware status, and then send an e-mail to a designated administrator. The eSOS also provides remote connection: Telnet server and FTP server, allowing the administrator to rescue the system.

Flash Lock

Flash Lock is a mechanism that binds the board and CF card (SQFlash) together. The user can "Lock" SQFlash via the Flash Lock function and "Unlock" it via BIOS while booting. A locked SQFlash cannot be read by any card reader or boot from other platforms without a BIOS with the "Unlock" feature.