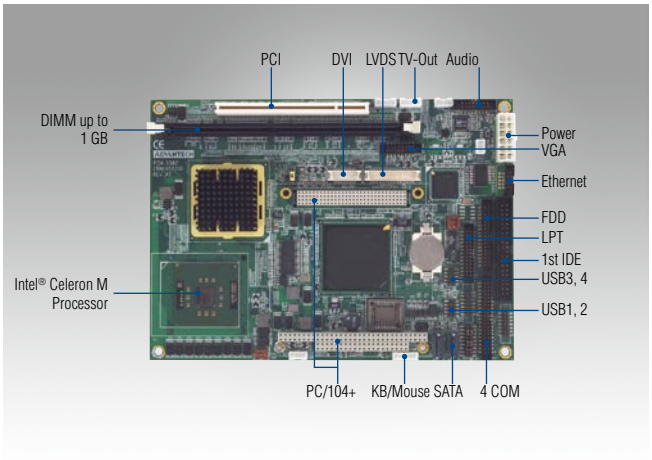
PCM-9587

Intel® Celeron® M Processor EBX SBC with LAN, LVDS, DVI, CRT, Audio, PC/104-Plus



Features

- Intel® Celeron® M Processor ultra low power
- Supports 36-bit LVDS/ DVI/ CRT
- Supports up to 1000 Mbps Ethernet
- PC/104-Plus (PCI + ISA (8bit)), Mini PCI and 1 x PCI Slot
- 2 x SATA 150 (RAID 0/1), 4 x COM, 4 x USB 2.0, 8-bit GPIO ports
- Supports embedded software APIs and utilities

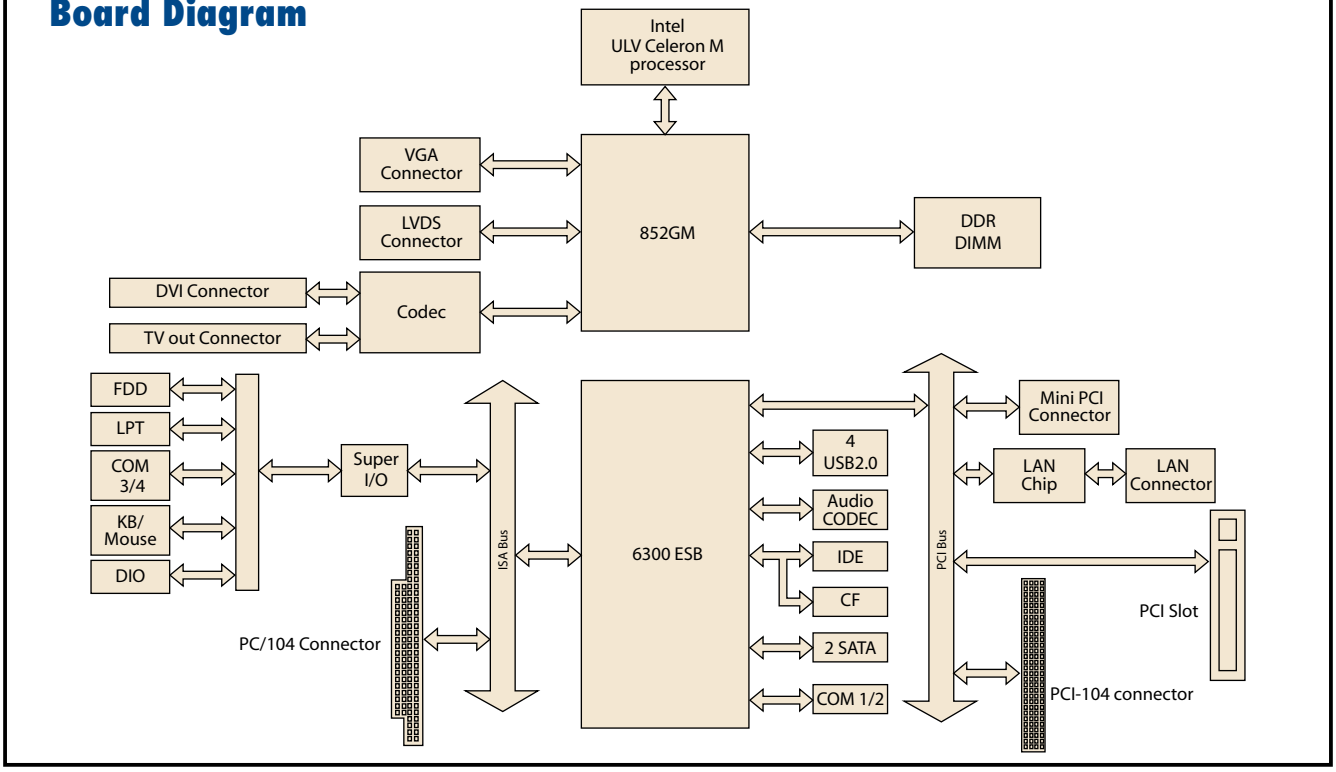
Software APIs: Watchdog, GPIO, CPU Speed, Backlight On/Off, System Throttling

Utilities: BIOS Flash, Monitoring

Specifications

Processor System	CPU	Intel Celeron M Processor ULV 600 MHz/ 1.0 GHz
	Front Side Bus	400 MHz
	L2 Cache	512 KB/ 0 KB
	Chipset	Intel 852GM + 6300ESB
	BIOS	Award 4 Mbit
Memory	Technology	DDR 200/266 MHz, ECC
	Max. Capacity	1 GB
	Socket	1 x 184-pin DIMM
Display	Chipset	Intel 852GM chip integrated. (Extreme Graphics 2)
	VRAM	Optimized Shared Memory Architecture up to 64 MB system memory
	Graphics Engine	Mobile Intel 852GM integrated 3D/2D engine
	LVDS	1 x 36-bit LVDS PS: 48-bit LVDS is possible but needs to be confirmed by AE for evaluation
	CRT	Up to 1600 x 1200 at 85-Hz and 2048 x 1536 at 75-Hz
	DVI	1 (Supports DVI displays up to 165 MHz, UXGA resolution)
	TV Out	Supports both NTSC/PAL, S-video and Composite Video (optional)
	Dual Display	CRT + LVDS, DVI + LVDS, TV-out + LVDS, CRT + DVI
Ethernet	Speed	10/100 Mbps on LAN (10/100/1000 Mbps is optional)
	Controller	Intel 82551ER, optional 82541PI (Giga LAN)
Audio	Chipset	Realtek ALC650 AC97 Speaker out, CD-input, Line-in, Line-out, Mic-in
	Amplifier	LM4863MT (TSSOP20) (Supports 8W 1 W or 4W 2 W Speaker for Speaker-out)
WatchDog Timer	Output	System reset
	Interval	Programmable 1 ~ 255 level
Storage	CompactFlash	Card Type I, Type II (shared 2nd IDE Channel)
	SATA	2 (Supports SATA RAID function (0,1))
	IDE	1 x EIDE (UDMA 100)
	Floppy	1 x FDD (Optional)
Internal I/O	Serial	3 x RS-232, 1 x RS-232/422/485
	Ethernet	LAN x 1 (RJ-45 connector through the cable)
	KB/Mouse	1
	CRT	1
	USB	4 x USB 2.0
	IDE	2 x EIDE (UDMA 100)
	Parallel (LPT)	1
	FDD	Share with LPT (Optional)
	SMBUS	Supported
	GPIO	8-bit general purpose input/output
Expansion	PC/104-Plus slot	1 (8-bit ISA)
	MiniPCI socket	1
	PCI Slot	1
Power	Power Type	AT / ATX AT is optional by request
	Power Supply Voltage	AT +5 V ±5%, +12 V ±5%, ATX +5 V ±5%, +12 V ±5%
	Power Consumption (Typical)	2.62 A @ 5 V, 0.03 A @ 12 V (Celeron M 600 with 256 MB DDR266)
	Power Consumption (Max, HCT)	2.63 A @ 5 V, 0.03 A @ 12 V (Celeron M 600 with 256 MB DDR266)
	Power Management	APM, ACPI
	Battery	Lithium 3 V / 196 mAH
Environment	Operating	0 ~ 60° C (32 ~ 140° F)
	Non-Operating	95% @ 60° C Relative Humidity
Physical Characteristics	Dimensions (L x W)	203 x 146 mm (8" x 5.75")
	Weight	0.85 kg (1.87 lb) (with Heatsink)

Board Diagram



Ordering Information

Part No.	CPU	L2 Cache	CRT	LVDS	DVI	TV out	10/100 LAN	Audio	USB 2.0	RS-232	RS/232/ 422/485	LPT/ FDD/ KB/MS	CF	SATA	PC/104+	PCI Slot	Mini PCI	Thermal Solution	Operating Temp.
PCM-9587F-M0A1E	Celeron M 600 MHz	512 KB	Yes	36-bit	Yes	Optional	1	Yes	4	3	1	Yes	Yes	2	Yes	1	1	Passive	0 ~ 60° C
PCM-9587F-S0A1E	Celeron M 1.0 GHz	0 KB	Yes	36-bit	Yes	Optional	1	Yes	4	3	1	Yes	Yes	2	Yes	1	1	Passive	0 ~ 60° C
PCM-9587Z-M0A1E	Celeron M 600 MHz	512 KB	Yes	36-bit	Yes	Optional	1	Yes	4	3	1	Yes	Yes	2	Yes	1	1	Passive	-20 ~ 80° C
PCM-9587Z-S0A1E	Celeron M 1.0 GHz	0 KB	Yes	36-bit	Yes	Optional	1	Yes	4	3	1	Yes	Yes	2	Yes	1	1	Passive	-20 ~ 80° C

PS: 48-bit LVDS possible but needs to be confirmed by AE for evaluation

Packing List

Part No.	Description	Quantity
	PCM-9587 SBC	1
9689000002	Mini Jumper Pack	1
2006958711	Startup Manual	1
2066958701	Utility CD	1
1700001112	ATX Power Cable	
	Heat sink 50 x 50 x 30 mm	1

Optional Accessories

Part No.	Description
PCM-10586-6200E	Wiring kit for PCM-9582/87
1703100260	USB cable (26 cm)
1703100121	USB cable (12 cm)
PCM-110-00A3E	1-slot PCI riser card for 5.25" biscuits
PCM-120-00A3E	2-slot PCI riser card for 5.25" biscuits
PCM-200-00A2E	PCI-104 to PCI bus module

Embedded OS

Embedded OS	Part No.	Description
Win XPE	2070000733	Image XPE SP2 (P-4_P-M Boards) V2.20 (ENG) (450 MB)
	2070001573	XPE FP2007 P4&PM-A (to 915) V3.0 ENG

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.

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.

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.

Power Saving

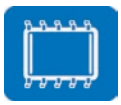
CPU Speed

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.